

Year 9: Separate Chemistry	- Curriculum Intent: Year 9 Chemistry tackles more complex ideas and concepts in the subject. It builds on the key knowledge from years 7 and 8 to link together all the areas of the subject. The key areas of particles, reactions, monitoring reactions and earth and environmental science are developed through more challenging topics such as structure and bonding, advanced chromatographic methods, and trends in the periodic table. Knowledge of key industrial chemical processes is also developed. Procedural knowledge and practical skills are developed further, building on experience with detecting gases, making observations in displacement reactions and monitoring rates of chemical reaction .					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key ideas and sequence of learning	Chemistry module C1 - particles • Particles • Chemical & physical changes • Atomic structure • History of the development of the atom • Periodic table Chemistry module C2 – elements & compounds • Relative formula mass • Empirical formula • Filtration and crystallisation • Distillation • Fractional distillation • Chromatography	Chemistry module C2 – elements & compounds • Metals and non-metals • Electronic structure • Forming ions • Ionic compounds • Simple molecules • Giant covalent • Polymer • Structure of metals • Allotropes of carbon	Chemistry module C2 – elements & compounds • Bulk properties • Nanoparticles Chemistry module 4 C4- Predicting and Identifying reactants and products • Group 1 • Group 7 • Group 0 • Reactivity of metals	Module 5: Monitoring and controlling chemical reactions. • Detecting gases (module 4) • Rates of reactions • Calculating the rate of reactions from graphs and data • Calculating average rate • Calculating instantaneous rate	Module 5: Monitoring and controlling chemical reactions. • Factors affecting rates of reaction-theory and practical work • Rates investigation (disciplinary language) Module 6: Global challenges • Formation of atmosphere • Pollution and atmosphere • Climate change • Potable water	Students revise and sit their EoY exams Students will complete practical investigations. Students will review their PPE exam papers • Choosing and recycling materials • Composite materials

Key Questions	- How are particles arranged in solids, liquids and gases? - What in inside the atoms? - How did we discover the atom? - How do we separate chemical compounds? - How can we purify and analyse chemicals?	- How are chemical bonds formed? - What are the allotropes of carbon? - What is the structure of metals and ionic compounds?	- How can we predict trends in the periodic table for Group 1 and Group 7 ? - Can you write and balance reactions with group 1? - How can we predict the products in a displacement reaction	- Can you describe gas tests and observations? - Can you describe and explain the factors that affect rate of reaction? - Can you calculate the average rate of reaction from data or a graph? - Can you calculate instantaneous rate of reaction from a graph?	- How was our atmosphere formed and how has it evolved? - Cause, effect and controlling pollutants - Impact of carbon emission on climate change	- How are materials recycled? - Choosing materials by analysing the properties
Vocabulary	- Solid - Liquid - Gas - Melting Point - Boiling Point - Ion - Isotope - Relative Formula Mass - Rf value - Filtration - Fractional Distillation	- Group - Period - Ionic Compound - Covalent Compound - Dot And Cross Diagram - Giant Lattice - Allotrope - Polymer - Metals - Lattice	- Reactivity - Trends - Nuclear attraction - Outer electron - Displacement reaction	- Average rate - Instantaneous rate - Tangent - Gradient - Reactant - Product - Frequency of collisions - Activation energy	- Independent variables - Dependent variable - Control variable	- Life cycle assessment - Composite materials
Practical Skills	- Comparing chemical and physical changes - Filtration and crystallisation - Distillation - Chromatography	Comparing properties of metals, ionic compounds and covalent compounds	- Reactivity trends for halogens- displacement reaction - Reactivity of metals- making and recording observations in	testing oxygen, carbon dioxide, chlorine and hydrogen gases	Monitoring rates of reaction to investigate the effect to temperature, catalyst, concentration and surface area on the rate of reaction	

			displacement reactions			
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