GCSE Chemistry

The Ripley Academy

Years 9 - 11

Unit Title	Unit Overview	Prior Knowledge / skills	New Learning
C1.1 – Atomic Structure & The Periodic Table	In this unit, students will be introduced to the structure of the atom and how the Periodic Table can help us find out about key properties of elements.	• Particle Theory (KS3) • Elements / Compounds • Periodic Table (KS3)	• Atomic Structure • History of Atomic Models • Electron Structure • Elements of the Periodic Table
C1.2 – Separating Mixtures	Students will learn how to separate mixtures using a variety of techniques.	• What is a mixture • How can they be separated • Evaporation	• Purity of substances • Formulations • Distillation • Chromatography • The transition elements
C1.3 – Structure and Bonding	A study of how atoms and molecules bond together to produce substances with different properties and why these properties exist.	• Particle Theory (KS3) • Elements / Compounds • Periodic Table (KS3)	• Ionic Bonding • Covalent Bonding • Metallic Bonding • Giant Structures • Nanoparticles and uses
C1.4 – Quantitative Chemistry	Students will learn how to perform the calculations required in the field of chemistry to find out key information.	• Particle Theory (KS3) • Elements / Compounds • Periodic Table (KS3)	• Moles and M_r • Conservation of Mass • Reacting Mass Calculations (HT) • Concentration • Chemical Yields • Titrations • Gas Volumes

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C1.5 – Extracting Metals	Most metals exist naturally as ores, in this unit students will learn the methods that scientists use to extract pure metals from these ores.	• Particle Theory (KS3) • Elements / Compounds • Chemical Reactions (KS3)	• Metal & Oxygen Reactions • Reactivity Series • Carbon Reduction • Phytomining and Bioleaching
C1.6 – Reactions of Acids	Students will learn how different elements react with acids to produce new reactants.	• Acids and Alkalis • The pH scale • Word equations for reactions	• Acid & Metal Reactions • Acids & Carbonates • Neutralisation Reactions • Strong and Weak Acids
C1.7 - Electrolysis	In this unit, students will learn about how electrolysis can be used to separate ionic compounds and solutions.	• Acids and Alkalis • Elements & Compounds • Electricity (KS3)	• Electrolysis of Liquids • Electrolysis of Solutions • Half Equations (HT) • Extraction of Aluminium • Battery Chemistry • Hydrogen Fuel cells
C1.8 – Energy Changes	A study of how chemical reactions causes energy changes and why they occur.	• Acids and Alkalis • Reactions of Metals & Acids • Chemical Bonding	• Endothermic Reactions • Exothermic Reactions • Reaction Profile Diagrams • Bond Enthalpy Calculations (HT)
C2.1 – Rates of Reaction	Students will learn about the factors that effect rates of reactions and why.	• Particle Theory (KS3) • Elements / Compounds • Periodic Table (KS3)	• How rates of reaction are measured • Factors that impact the rate of a reaction • The role of Catalysts
C2.2 – Reversible Reactions	In this unit, students will learn about why some reactions can be reversed and the properties behind these reactions.	• Acids and Alkalis • Reactions of Metals & Acids • Chemical Bonding	• What is a reversible reaction • Reversible reaction equations • Le Chatelier's Principle (HT)

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C2.3 – Organic Chemistry	The study of Hydrocarbons and the properties of the different factions of Crude Oil.	• Particle Theory (KS3) • Elements / Compounds • Chemical Bonding (KS4)	• What is a Hydrocarbon • Properties of Hydrocarbons • Crude Oil and Fractional Distillation • Cracking • Reactions of Alkenes and Alcohols • Carboxylic acids • Polymers
C2.4 – Chemical Analysis	Students will learn about how mixtures can be analysed to find key properties and information about them.	• Elements / Compounds / Mixtures • Separating Mixtures (KS4) • Chromatography	• How to analyse a chromatogram • Identifying substances of a mixture from Chromatograms • R_f Values • Testing for Ions
C2.5 – Chemistry of the Atmosphere	The earths atmosphere as we know it is constantly evolving, in this unit students will study why the present day atmosphere is as it is, and how it was historically. They will also learn about climate change and the impacts of it.	• Solids / Liquids / Gases • Pollution (KS3) • The Earth and it's Atmosphere (KS3)	• Chemistry of the Atmosphere • History of the Atmosphere • Green House Gases • Climate Change and its Impacts
C2.6 – Using Resources	Students will learn about recycling techniques (including water) and some of the techniques scientists use to ensure that we maximise the use of the resources that we have.	• The Earth and it's Atmosphere (KS3) • The Carbon Cycle • Chemistry of the Atmosphere (KS4)	• Finite and Infinite Resources • Potable Water • Waste Water Treatment • Life Cycle Assessments • Alloys • Properties and uses of Polymers • The Haber Process