

KS4 Curriculum Plan 2022-23

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TOPIC	LP1	LP2	LP3	LP4	LP5	
	Atomic structure and the periodic table	Bonding and structure	Chemical calculations	Chemical changes and electrolysis	Energy changes	
Year 10	Knowledge	Ions, Isotopes, Size of atoms, Atomic theory, Explaining trends in periodic table groups, Displacement reactions of the halogens, Transition metals	Ionic bonding, properties of ionic compounds, covalent bonding, properties of simple covalent substances, polymers, properties of giant covalent substances, metallic bonding, alloys, properties of metallic substances, allotropes of Carbon and nanoparticles.	Formula Mass, Moles, Avogadro's constant, balancing equations using masses, using balanced equations to find masses, limiting reactants, concentration, percentage yield, atom economy, titrations, titration calculations, volume of gases	Oxidation and reduction, OILRIG, Acid reactions with: metals, metal oxides, alkalis and carbonates. Strong and weak acids, pH and H ⁺ ion concentration, electrolysis, electrolysing molten ionic compounds, electrolysing aqueous ionic compounds, extracting Aluminium.	Exothermic and endothermic reactions, Using energy transfers from reactions, reaction profiles, bond energy calculations. Chemical cells and batteries, fuel cells
	Skills	Standard form (MS) Making estimations (MS) Balancing equations using ionic formulae Separating mixtures using a range of equipment (Practical skill) Atom notation Using scientific models and understanding the limitations of scientific models Balancing equations using ionic formulae Representing ionic and covalent bonding using diagrams Calculating surface area to volume ratio (MS) Conversion of units (MS) Explaining the properties of materials using their structure Drawing polymer repeating units Calculating formula mass Calculating moles Calculating concentration Conducting a titration (Practical skill) Applying Avogadro's constant Writing balanced ionic half equations Making salts (Practical skill) Neutralisation titration (Practical skill) Electrolysing aqueous solutions (Practical skill) Investigating temperature changes (Practical skill) Calculating bond energies Interpreting reaction profiles and drawing reaction profiles Investigating chemical cells (Practical skill)				
	Key Vocab	Atom, electron, proton, neutron, nucleus, shells, Dalton, Rutherford, Thompson, Bohr, Chadwick, isotopes, periodic table, groups, periods, reactivity, trends, distillation, crystallisation, evaporation, transition metal, ions, ionic	Atom, molecule, ion, metal, non-metal, ionic bonding, covalent bonding, ionic lattice, simple molecular, giant molecular, properties, metal, dot-cross diagram, Nano particle, fullerene, Nano-tube.	Atomic mass, formula mass, moles, limiting reactant, percentage yield, atom economy, titration, error, concentration, displacement, ionic equation, reactivity series, acid, alkali, neutralisation.	Oxidation, Reduction, OILRIG, Metal reactivity series, Metal oxide base, metal salt, alkali, Metal carbonate, electrolysis, electrode, anode, cathode, aqueous, molten	Exothermic reaction, endothermic reaction, reaction profile, activation energy, bond enthalpy, chemical cell, fuel cell, battery
Year 11	TOPIC	LP1	LP2	LP3	LP4	LP5
		Rates of reaction and equilibrium	Crude oil and fuels, organic reactions and polymers	Chemical analysis and the Earths atmosphere	Earths resources and using resources	
	Knowledge	Factors which affect the rate of reaction, Activation energy Catalysts, Surface area, Concentration, Collision theory, Reversible reactions, Le Chatelier's principle, Dynamic equilibrium	Formation of crude oil, hydrocarbons, alkanes, alkenes, fractional distillation, cracking, polymers, reactions of alkenes, alcohols and their reactions, Carboxylic acids and their reactions, esters, condensation polymerisation, natural polymers, DNA	Testing for positive and negative ions, Earths early atmosphere, How the atmosphere developed, Climate change, Global warming, Atmospheric pollutants	Finite and renewable resources, Potable water, Waste water treatment, Alternative methods of extracting metals, Lifecycle assessment, Reduce, reuse and recycle Rusting, Glass, ceramics, composites, Haber process, Making fertilisers in the lab and in industry	
Skills	Calculating rate of the reaction from data MS Calculating rate of reaction from tangent of a graph MS Measuring the rate of reaction Practical skills Apply the general formula for alkanes, alkenes, alcohols and carboxylic acids Explain an organic molecules chemical properties. Draw the displayed formula for monomers and repeating units for addition polymers. Relate the correct repeating unit to an addition polymer Explain the basic principles of condensation polymerisation Identifying ions present in unknown compounds Practical skill Interpreting data from graphs and tables as evidence for climate change. MS Testing water samples to identify whether they are pure or impure Practical skill Interpreting data to identify whether a resource is renewable or finite MS Lifecycle assessment of a product to assess its sustainability Producing a fertiliser. Practical skill					
Key Vocab	Rate of reaction, Temperature, Concentration, Surface area, Catalyst, Collision theory, Reversible reaction, Dynamic equilibrium, Le Chatelier's principle	Organic molecule, Hydrocarbon, alkane, alkene, fractional distillation, cracking, polymerisation, alcohol, functional group, carboxylic acid, ester, natural polymer, condensation polymer	ions precipitation reaction flame test early atmosphere modern atmosphere pollutant greenhouse gas particulates acid rain	Finite, renewable, potable water, pure water, waste water, sludge, effluent, phytomining, bioleaching, ore, lifecycle assessment, rusting, sacrificial protection, alloys, matrix, binder, composite, Haber process.		