



CURRICULUM PLAN

TRIPLE SCIENCE CHEMISTRY
(EDEXCEL 9-1)
BRAMHALL HIGH SCHOOL

Curriculum Intent

It is our intention as Science Department to provide all children, regardless of their prior learning, background, or special needs, with a broad and balanced science curriculum. We aim to promote positive attitudes to science as an interesting and enjoyable subject. To develop pupils' awareness of how science impacts on their everyday life.

Pupils are encouraged to develop their practical skills, to work collaboratively and to query and evaluate scientific evidence.

We aim to cultivate an environment conducive to learning. We encourage and value our pupils' opinions, ideas, and contributions. Similarly, we expect pupils to strive for excellence and respect the contributions of other adults and their peers. Our intention is for pupils to enjoy their learning, to be resilient, make progress and achieve at an appropriate level.

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YEAR 10

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	<p>SC5 Ionic Bonding SC6 Covalent Bonding SC7 Types of substance</p> <ul style="list-style-type: none"> - Recap of structure of the atom from year 9 - Ionic bonding - Ionic properties - Covalent bonding - Properties of covalent structures - Giant covalent structures and their properties - Properties and bonding of metals - Bonding models 	<p>Atomic structure and the Periodic Table Structure, bonding and the properties of matter The development of scientific thinking Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Bonding Q's End of unit test</p>	<p>Allow time to practice ionic bonding to solidify understanding. Can do practical work to aid understanding of properties of ionic compounds. Allow time to practice covalent bonding to solidify understanding. Can do practical work to aid understanding of properties of covalent compounds.</p>	<p>Tier 1: *ions, atoms, conductivity Tier 2: *lattice, covalent, Tier 3: cation, anion</p>
Term 1b	<p>SC8 Acids and Alkalis</p> <ul style="list-style-type: none"> - Indicators and pH - Acid properties - Bases and Salts - Acids & alkalis - Balancing equations - Neutralisation - Acids with metals and carbonates - Solubility 	<p>Chemical & allied industries Chemical changes Atomic structure and the Periodic Table The development of scientific thinking Experimental skills and strategies Analysis and evaluation Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Core practical CuSO₄ CPR - Core Practical Neutralisation End of unit test on Acids and alkalis</p>	<p>Ensure core practicals are completed using either full write up or examination style questions. Develop maths skills & link to calculations. Consideration of mining and the impact of extracting metals on the environment. (SMSC)</p>	<p>Tier 1: *Acid, *alkali, measuring cylinder, neutral, salt. Tier 2: Corrosive, indicator. Tier 3: Chemical change, litmus, neutralisation, pH paper, Universal Indicator</p>

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<p>Term 2a</p>	<p>SC9 Calculations involving masses</p> <ul style="list-style-type: none"> - Relative Formula Mass - Empirical formula - Reacting Masses - Conservation of mass - Concentration - Moles (Higher only) 	<p>Chemical and allied industries Chemical changes The development of scientific thinking Experimental skills and strategies Analysis and evaluation Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Empirical Formula questions CPR - Calculations involve masses</p>	<p>Develop maths skills & link practical work to calculations.</p>	<p>Tier 1: Formula mass Tier 2: Excess. Tier 3: Avogadro number, *empirical formula, mole, molecular formula</p>
<p>Term 2b</p>	<p>SC10 Electrolytic Processes SC11 Obtaining and using metals SC12 Reversible reactions and equilibria SC13 Transition metals, alloys and corrosion</p> <ul style="list-style-type: none"> - Reactivity of metals - Displacement Reactions - Ores - Oxidation and Reduction - Recycling and Life Cycle - Electrolysis - Equilibrium - Transition metals - Corrosion - Electroplating and alloys 	<p>Chemical and allied industries Atomic structure and the Periodic Table Chemical analysis The development of scientific thinking Experimental skills and strategies Analysis and evaluation Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Core practical Electrolysis Q /write up</p> <p>Year 10 examinations</p>	<p>Consideration of mining and the impact of extracting metals on the environment. (SMSC)</p>	<p>Tier 1: Ore, alloys Tier 2: *Displacement, *electrolysis, extraction, natural resources Tier 3: Reactivity series. inert, unreactive. Tier 3: oxidation, reduction, redox. Anion, anode, cathode, cation, conductor, electrolyte, electrode, half-equation, position of *equilibrium, reversible reaction.</p>

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<p>Term 3a</p>	<p>SC14 Quantitative analysis SC15 Dynamic equilibrium, calculations involving volumes of gases SC16 Chemical Cells and fuel cells</p> <ul style="list-style-type: none"> - Yield - Atom economy - Concentration - Titration - Gas volumes - Fertilisers - Equilibrium factors - Chemical and fuel cells 	<p>Chemical and allied industries Atomic structure and the Periodic Table Chemical analysis The development of scientific thinking Experimental skills and strategies Analysis and evaluation Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Acids & alkali titration</p> <p>End of unit test on Yield – Chemical Fuel Cells</p>	<p>Development of maths skills and linking practical work alongside the relevant calculations.</p>	<p>Tier 1: End point Tier 2: Indicator Tier 3: Burette, concordant, pipette, *titration.</p>
<p>Term 3b</p>	<p>SC17 Groups in the periodic table</p> <ul style="list-style-type: none"> - Group 1 - Group 7 - Halogen Reactivity - Group 0 	<p>Atomic structure and the Periodic Table</p> <p>The development of scientific thinking Experimental skills & strategies, Analysis & eval Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Qs on Groups of periodic table.</p>	<p>Build on and recap ideas of electron configurations, linking this to reactivity. Use of range of practical skills. Modelling of reactions.</p>	<p>Tier 1: Groups. Tier 2: *Alkali metal, *halogen, *noble gas,</p>

YEAR 11

Term	Programme of Learning	Links to the National Curriculum / Specification / Additional	Assessments	What extra learning opportunities are planned?	Disciplinary Literacy
Term 1a	<p>SC18 Rates of reaction SC19 Heat energy changes in chemical reactions</p> <ul style="list-style-type: none"> - Rates of Reaction - Collision theory - Factors affecting rates - Catalysts and activation energy - Endothermic Reactions - Exothermic Reactions - Energy in Reactions 	<p>Rate and extent of chemical change Energy changes in chemistry The development of scientific thinking Experimental skills & strategies, Analysis & eval Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Rates of reaction questions on (Temperature, concentration, surface area and catalysts)</p> <p>End of unit test on groups and rates of reaction.</p>	<p>Enrichment – Tuesday revision Understanding of implications of finite resources and how humans are affecting the environment. (SMSC)</p>	<p>Tier 1: Enzyme, particle, *rate of reaction, surface area. Tier 2: *Catalyst, collision, gradient. Tier 3: *Activation energy, surface area to volume ratio, bond breaking, *endothermic, *exothermic, profile.</p>
Term 1b	<p>SC20 Fuels SC21 Earth and atmospheric science</p> <ul style="list-style-type: none"> - Crude Oil - Fractional Distillation - Alkanes - Complete combustion - Incomplete combustion - Fuels and pollution 	<p>Energy changes in chemistry Rate and extent of chemical change Earth and atmospheric science The development of scientific thinking Experimental skills and strategies Vocabulary,</p>	<p>CPR - Fractional Distillation Qs</p> <p>End of topic test for fuels and the atmosphere.</p> <p>Year 11 mock examination</p>	<p>Enrichment – Tuesday revision Understanding of implications of finite resources and how humans are affecting the environment. (SMSC)</p>	<p>Tier 1: Crude oil, diesel oil, fuel, gases, *alkane, non-renewable, petrol. Tier 2: Bitumen, complete combustion, finite, fuel oil, causation incomplete *combustion,</p>

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	<ul style="list-style-type: none"> - Alternative Fuels - Breaking down hydrocarbons (Cracking) <p>SC21 Earth and atmospheric science</p> <ul style="list-style-type: none"> - Earth's early atmosphere - Atmospheric changes - Climate change <p>Preparation for Mock Examinations</p>	units, symbols and nomenclature			<p>kerosene, Atmosphere, climate change, global warming, greenhouse effect, correlation.</p> <p>Tier 3: Alkane, fractional distillation, homologous, hydrocarbon, Evolution, photosynthesis.</p>
Term 2a	<p>SC22 Hydrocarbons SC23 Alcohols and Carboxylic acids SC24 Polymers</p> <ul style="list-style-type: none"> - Alkanes and Alkenes and their reactions - Ethanol production - Alcohols - Carboxylic acids - Addition polymerization - Condensation polymerization - Polymer properties - Polymer uses - Problems with polymers 	<p>Chemical and allied industries</p> <p>Chemical and allied industries</p> <p>Chemical analysis</p> <p>The development of scientific thinking</p> <p>Experimental skills and strategies Analysis and evaluation</p> <p>Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Hydrocarbons Q's</p> <p>CPR - Core prac alcohols</p>	<p>Enrichment – Tuesday revision</p> <p>Understanding of implications of finite resources and how humans are affecting the environment. (SMSC)</p>	<p>Tier 1: Addition, biodegradable (specific chemistry usage), landfill site, recycling.</p> <p>Tier 2: Saturated.</p> <p>Tier 3: Alkane, *alkene, *homologous series, hydrocarbon, polymer, structural formula, unsaturated.</p>

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<p>Term 2b</p>	<p>SC25 Qualitative analysis: tests for ions SC26 Bulk and surface properties of matter including nanoparticles</p> <ul style="list-style-type: none"> - Positive ion testing - Negative ion testing - Choosing materials - Composite materials - Nanoparticles 	<p>Chemical and allied industries Chemical and allied industries Chemical analysis The development of scientific thinking Experimental skills and strategies Analysis and evaluation Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Core Practical positive ions CPR - Core Practical negative ions</p> <p>Year 11 2nd Mock Examination</p>	<p>Enrichment – Tuesday revision Links to forensics work and recognising unknown chemicals.</p>	<p>Tier 1: cation, anion. Tier 2: *Composite. Tier 3: Fuel cell, chemical cell, *nanoparticle, surface area to volume ratio.</p>
<p>Term 3a</p>	<p>Revision</p>			<p>Enrichment – Tuesday revision</p>	

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Term 3b					
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