



CURRICULUM PLAN

COMBINED 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.

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>CC5 - 7 Ionic Bonding, Covalent Bonding, Types of Substances</p> <ul style="list-style-type: none"> - 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 Q1 CPR - Bonding Q2 End of unit test in bonding types and bonding models.</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>CC8 Acids & Alkalis</p> <ul style="list-style-type: none"> - Indicators and pH - Acid properties - Bases and Salts - Acids & alkalis - Balancing equations 	<p>Chemical changes Experimental skills and strategies Analysis and evaluation Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Core practical CuSO₄ CPR - Salts equations</p>	<p>Ensure core practicals are completed using ether full write up of the investigation or completion of examination style questions.</p>	<p>Tier 1: *Acid, alkali, measuring cylinder, neutral, salt. Tier 2: Corrosive, indicator. Tier 3: Chemical change, litmus, neutralisation, Universal Indicator</p>

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<p>Term 2a</p>	<p>CC8 Acids & Alkalis</p> <ul style="list-style-type: none"> - Neutralisation - Acids with metals - Acids with carbonates - Solubility 	<p>Chemical changes Exp skills and strategies. Analysis and evaluation. Vocabulary Units Symbols and nomenclature</p>	<p>CPR - Core Practical Neutralisation End of unit test on Acids and alkalis</p>	<p>Mastery word and symbol equations Ext work turning the symbols ionic equations MA</p>	<p>Tier 1: Acid, *alkali, measuring cylinder, neutral, salt. Tier 2: neutralisation, indicator, solubility. *precipitate Tier 3: symbol equation.</p>
<p>Term 2b</p>	<p>CC9 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 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>Year 10 Examinations</p>	<p>Development of maths skills and linking practical work alongside the relevant calculations.</p>	<p>Tier 2: Excess. Tier 3: Avogadro number, *empirical formula, mole, molecular formula.</p>

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<p>Term 3a</p>	<p>CC11 Obtaining and Using Metals</p> <ul style="list-style-type: none"> - Reactivity of metals - Displacement Reactions - Ores - Oxidation and Reduction 	<p>Chemical and allied industries Chemical changes Atomic structure and the Periodic Table The development of scientific thinking Experimental skills and strategies Analysis and evaluation</p>	<p>CPR - Past Question and write up of practical work</p>	<p>Consideration of mining and the impact of extracting metals on the environment. (SMSC)</p>	<p>Tier 1: Ore Tier 2: *Displacement, *electrolysis, extraction, natural resources Tier 3: Reactivity series. inert, unreactive. Tier 3: oxidation, reduction, redox.</p>
<p>Term 3b</p>	<p>CC10 – 13 Electrolysis Processes, Reversible Reactions and Equilibria, Groups in the Periodic Table</p> <ul style="list-style-type: none"> - Recycling and Life Cycle - Electrolysis - Equilibrium - Group 1 - Group 7 - Halogen Reactivity - Group 0 	<p>Chemical and allied industries Chemical changes Atomic structure and the Periodic Table The development of scientific thinking Experimental skills and strategies Analysis and evaluation Atomic structure and the Periodic Table The development of scientific thinking Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Core practical Electrolysis Q/write up</p>	<p>End of topic test on Metals, obtaining and purifying metals. (This test also includes the calculations) Build on and recap ideas of electron configurations, linking this to reactivity.</p>	<p>Tier 1: Group. Tier 2: *Alkali metal, *halogen, *noble gas, Tier 3: Anion, anode, cathode, cation, conductor, electrolyte, electrode, half-equation, position of equilibrium, reversible reaction.</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>CC14 – 15 Rates of Reaction, 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 The development of scientific thinking Experimental skills and strategies Vocabulary, units, symbols and nomenclature</p>	<p>CPR - Rates of reaction questions on (Temperature, concentration, surface area and catalysts)</p>	<p>Enrichment – Tues revision</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.</p>
Term 1b	<p>CC15 Heat Energy Changes in Chemical Reactions</p> <ul style="list-style-type: none"> - Endothermic Reactions - Exothermic Reactions - Energy in Reactions <p>Preparation for and completion of year 11 mock exams.</p>	<p>Energy changes in chemistry</p>	<p>End of unit test Year 11 Mock Examination</p>	<p>Enrichment – Tues revision Understanding of implications of finite resources and how humans are affecting the environment. (SMSC)</p>	<p>Tier 3: *Activation energy, bond breaking, bond-making, *endothermic reaction, *exothermic reaction, reaction profile.</p>

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<p>Term 2a</p>	<p>CC16 – 17 Fuels, Earth and Atmospheric Science</p> <ul style="list-style-type: none"> - Crude Oil - Fractional Distillation - Alkanes - Complete Combustion - Incomplete combustion - Fuels and pollution - Alternative Fuels - Breaking down hydrocarbons (Cracking) - Earth's early atmosphere - Atmospheric changes - Climate change 	<p>Earth and atmospheric science Chemical and allied industries Ecosystems The development of scientific thinking Experimental skills and strategies Vocabulary Units Symbols and nomenclature</p>	<p>CPR - Fractional Distillation questions</p> <p>CPR - Pollution Questions</p>	<p>Enrichment – Tues 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, non-renewable, petrol. Tier 2: Bitumen, complete *combustion, finite, fuel oil, incomplete combustion, kerosene. Tier 3: *Alkane, fractional distillation, homologous series, hydrocarbon.</p>
<p>Term 2b</p>	<p>Revision</p>		<p>Year 11 2nd Mock examination</p>	<p>Enrichment – Tues revision</p>	

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Term 3a	Revision			Enrichment – Tues revision	
Term 3b					