



## Curriculum Intent Statement for Chemistry

At Chase Terrace Academy we aspire for all of our students to achieve greater things than they ever thought possible.

We pride ourselves on being a warm and welcoming school that places community at the heart of everything we do. Our ambitious curriculum is enriching and inclusive, providing challenge and breadth for all. This empowers our students to become compassionate, confident and creative individuals who are resilient, respectful and equipped with a desire to take up a fulfilling role in society and the wider world.

Through the study of science we want to encourage our students to understand and value different cultures, countries and people as well as having an appreciation of how the world works and science in the media which can often be misinterpreted.

We aspire for our students to retain a sense of wonder about our vast and complex Universe. Future generations should be aware of how scientific and technological progress is changing the world, and to help the wider public understand it. It is important to ensure that these changes are heading in the right direction. In a democratic society, this means that everyone needs to have a basic understanding of science to make informed, responsible decisions about the future.

We put student-teacher relationships at the heart of what we do and therefore we start our lessons promptly and greet students at the door when they arrive and when they leave.

We provide the opportunity for those students with a particular passion for science to study single sciences. This gives students the scope to further broaden and deepen their scientific knowledge in preparation for study at A-level and beyond.

Curriculum Implementation Plan

Science Overall Big Picture			
	Term 1	Term 2	Term 3
Year 7	<ul style="list-style-type: none"> <li>• Cells</li> <li>• Particles &amp; the Particle Model of Matter</li> <li>• Energy</li> </ul>	<ul style="list-style-type: none"> <li>• Reproduction</li> <li>• Separating Mixtures</li> <li>• Electricity &amp; Magnetism</li> </ul>	<ul style="list-style-type: none"> <li>• Ecosystems</li> <li>• Acids &amp; Bases</li> <li>• Space &amp; Waves</li> <li>• <b>End of year exam</b></li> </ul>
Year 8	<ul style="list-style-type: none"> <li>• Nutrition &amp; Digestion</li> <li>• Atoms, Elements (including Periodic Table) &amp; Compounds</li> <li>• Forces</li> </ul>	<ul style="list-style-type: none"> <li>• Respiration</li> <li>• Chemical Reactions</li> <li>• Light &amp; Sound</li> </ul>	<ul style="list-style-type: none"> <li>• Plants &amp; Photosynthesis</li> <li>• Chemical Quantities</li> <li>• Pressure &amp; Speed</li> <li>• <b>End of year exam</b></li> </ul>
Year 9	<ul style="list-style-type: none"> <li>• Maths skills &amp; science skills 1</li> <li>• Cells</li> <li>• Atomic structure &amp; Periodic Table</li> <li>• Particle model of matter</li> </ul>		<ul style="list-style-type: none"> <li>• Maths skills &amp; science skills 2</li> <li>• Transport in cells</li> <li>• Energy changes</li> <li>• Atomic structure &amp; radiation (physics)</li> <li>• Practical investigations</li> </ul>
Year 10	Biology <ul style="list-style-type: none"> <li>• Organisation</li> <li>• Infection &amp; Response</li> </ul> Chemistry <ul style="list-style-type: none"> <li>• Structure &amp; bonding</li> <li>• Quantitative chemistry</li> </ul> Physics <ul style="list-style-type: none"> <li>• Particle model of matter</li> <li>• Atomic structure &amp; radiation</li> </ul>	Biology <ul style="list-style-type: none"> <li>• Bioenergetics</li> <li>• Homeostasis</li> </ul> Chemistry <ul style="list-style-type: none"> <li>• Chemical changes</li> </ul> Physics <ul style="list-style-type: none"> <li>• Energy</li> </ul>	Biology <ul style="list-style-type: none"> <li>• Homeostasis</li> </ul> Chemistry <ul style="list-style-type: none"> <li>• Energy changes</li> <li>• Rate &amp; extent of chemical change 2 (equilibria)</li> </ul> Physics <ul style="list-style-type: none"> <li>• Forces 1</li> </ul>
Year 11	Biology <ul style="list-style-type: none"> <li>• Inheritance</li> <li>• Ecology</li> </ul> Chemistry	Biology <ul style="list-style-type: none"> <li>• Ecology</li> <li>• Revision</li> </ul> Chemistry	Revision and exam preparation

	<ul style="list-style-type: none"> <li>• Extent of chemical change</li> <li>• Organic</li> <li>• Analysis</li> <li>• Using resources</li> </ul> Physics <ul style="list-style-type: none"> <li>• Forces (part 2)</li> <li>• Waves</li> <li>• Electromagnetism</li> <li>• Static electricity (single only)</li> <li>• Space (single only)</li> </ul>	<ul style="list-style-type: none"> <li>• Using resources</li> <li>• Atmosphere revision</li> </ul> Physics <ul style="list-style-type: none"> <li>• Electromagnetism</li> <li>• Space (single science only)</li> <li>• Maths skills &amp; science terms</li> <li>• Revision and exam preparation after half term</li> </ul>	
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### Curriculum Implementation Plan

CHEMISTRY			
	Term 1	Term 2	Term 3
Year 7	<ul style="list-style-type: none"> <li>• Intro into science</li> <li>• Particles &amp; the Particle Model of Matter</li> </ul>	<ul style="list-style-type: none"> <li>• Separating Mixtures</li> </ul>	<ul style="list-style-type: none"> <li>• Acids &amp; Bases</li> </ul>
Year 8	<ul style="list-style-type: none"> <li>• Atoms, Elements &amp; Compounds</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical Reactions</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical Quantities</li> </ul>
Year 9	<ul style="list-style-type: none"> <li>• Maths skills &amp; science skills 1</li> <li>• Atomic structure &amp; Periodic Table</li> </ul>	<ul style="list-style-type: none"> <li>• Maths skills &amp; science skills 2</li> <li>• Energy changes</li> <li>• Practical investigations</li> </ul>	
Year 10	<ul style="list-style-type: none"> <li>• Structure &amp; bonding</li> <li>• Quantitative chemistry</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical changes</li> </ul>	<ul style="list-style-type: none"> <li>• Energy changes revisit</li> <li>• Rate &amp; extent of chemical change</li> </ul>
Year 11	<ul style="list-style-type: none"> <li>• Extent of chemical change</li> <li>• Organic chemistry</li> <li>• Chemical analysis</li> <li>• Earth &amp; its atmosphere</li> </ul>	<ul style="list-style-type: none"> <li>• Atmosphere revision</li> <li>• Using resources</li> </ul>	<ul style="list-style-type: none"> <li>• Revision &amp; exam preparation</li> </ul>
Year 12	<ul style="list-style-type: none"> <li>• Atomic structure</li> <li>• Amount of substance</li> <li>• Bonding</li> </ul>	<ul style="list-style-type: none"> <li>• Organic – alkenes</li> <li>• Halogenoalkanes</li> <li>• Alcohols</li> </ul>	<ul style="list-style-type: none"> <li>• Analysis, Mass spec &amp; IR</li> <li>• Optical isomerism</li> <li>• Aldehydes &amp; ketones</li> </ul>



	<ul style="list-style-type: none"> <li>• Kinetics</li> <li>• Intro into organic &amp; Alkanes</li> <li>• Energetics</li> </ul>	<ul style="list-style-type: none"> <li>• Equilibria</li> <li>• Redox</li> <li>• Group 2</li> <li>• Group 7</li> <li>• Periodicity</li> </ul>	<ul style="list-style-type: none"> <li>• Revision &amp; exam preparation</li> <li>• Thermodynamics (A2)</li> </ul>
Year 13	<ul style="list-style-type: none"> <li>• Carboxylic Acids &amp; Esters</li> <li>• Aromatic Chemistry</li> <li>• Amines</li> <li>• NMR</li> <li>• Acids &amp; Bases</li> <li>• Electrode potentials</li> </ul>	<ul style="list-style-type: none"> <li>• Polymers</li> <li>• Amino Acids, Proteins &amp; DNA</li> <li>• Organic synthesis</li> <li>• Chromatography</li> <li>• Transition metals</li> <li>• Reactions of ions in aqueous solutions</li> <li>• Properties of period 3 elements and their oxides</li> </ul>	<ul style="list-style-type: none"> <li>• Revision &amp; exam preparation</li> </ul>

### Chemistry Curriculum Implementation Plan

Chemistry				
Knowledge and Skills – Students will be taught to...	Reading, Oracy, Literacy and Numeracy	Formative Assessment	Summative Assessment	Link to GCSE Content
<p>Throughout their Chemistry journey students will learn to analyse patterns, draw conclusions, present data, read, understand and respond to information, justify opinions, collect data, plan variables, test hypotheses, estimate and minimise risks, examine consequences, review theories and interrogate sources of information.</p> <p><b>Intro into Science</b></p> <ul style="list-style-type: none"> <li>• Lab safety &amp; hazards</li> </ul>	<p><b>Reading:</b></p> <ul style="list-style-type: none"> <li>• Regular use of on screen sources and science news articles in lessons.</li> <li>• Research and online reading</li> <li>• Science revision guides</li> </ul> <p><b>Recommended reading:</b></p> <p>Frozen Planet – Alistair Fothergill</p>	<p>Questioning in lessons</p> <p>Whole class feedback during lessons</p> <p>Regular verbal feedback</p> <p>Peer and self-assessment of written work</p>	<p>4 end of unit assessments based on all previous work which continues to build on ideas from previous topics completed in the academic year to inform reports.</p> <p>At the end of each year students will sit an end</p>	<p>Most of the topics in year 7&amp;8 are designed to maintain student's natural curiosity, develop practical skills and also to provide solid foundations of the concepts they will meet at GCSE.</p> <p>In year 9 students revisit and build upon some of the key</p>



<ul style="list-style-type: none"><li>• Microscopes &amp; Bunsen burners</li><li>• The scientific method</li></ul> <p><b>C1 - Particles</b></p> <ul style="list-style-type: none"><li>• Properties of solids, liquids and gases</li><li>• The particle model</li><li>• Density, expansion, diffusion, change of state</li></ul> <p><b>C2 - Separating Mixtures</b></p> <ul style="list-style-type: none"><li>• Soluble and insoluble substances</li><li>• Filtration</li><li>• Distillation</li><li>• Chromatography</li></ul> <p><b>C3 - Acids and Bases</b></p> <ul style="list-style-type: none"><li>• Testing acids and alkalis</li><li>• Making indicators</li><li>• The pH Scale and neutralisation</li></ul> <p><b>B4 - Nutrition &amp; digestion</b></p> <ul style="list-style-type: none"><li>• What makes a healthy diet?</li><li>• Calculations of energy requirements in a healthy daily diet</li><li>• Consequences of imbalances in the diet, deficiency diseases</li><li>• The human digestive system</li><li>• Importance of bacteria in the digestive system</li><li>• Effects of recreational drugs.</li></ul> <p><b>C4 - Atoms, Elements and Compounds</b></p>	<p>Horrible Science (collection of books) – Nick Arnold Longitude – Dava Sobel Nightwatch – Terence Dickinson Planet Earth – Alistair Fothergill The Planets – Dava Sobel Science: The Definitive Visual Guide – Adam Hart Davis (Dorling Kingsley) Wonders of the Universe - Brian Cox WOW: The Visual Encyclopaedia – Dorling Kingsley Oxygen – Nick Lane</p>	<p>Low stakes quizzing</p> <p>Exit strategies</p>	<p>of year exam covering all the key ideas from the current year and some topics from previous years</p>	<p>ideas in science (e.g. cells, particles and energy) to provide a solid foundation for the concepts they will meet in year 10 &amp; 11 (e.g. cells, particles, chemical reactions, energy &amp; forces).</p> <p>All set questions are GCSE style.</p> <p>Range of language based skills to prepare for GCSE.</p>
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<ul style="list-style-type: none"><li>• Elements &amp; The Periodic Table</li><li>• Compounds and chemical reactions</li><li>• Atoms and molecules</li></ul> <p><b>P4 - Matter</b></p> <ul style="list-style-type: none"><li>• Density</li><li>• Physical changes of state</li><li>• Brownian motion</li><li>• Internal energy and temperature</li></ul> <p><b>B5 - Respiration and fitness</b></p> <ul style="list-style-type: none"><li>• Structure and functions of the gas exchange system in humans</li><li>• Lungs and our breathing, measuring lung volume</li><li>• Impact of exercise, asthma and smoking</li><li>• Aerobic and anaerobic respiration</li></ul> <p><b>C5 - Chemical Reactions</b></p> <ul style="list-style-type: none"><li>• Chemical and physical changes</li><li>• Reactions of acids and metals</li><li>• Gas tests</li><li>• Atoms and molecules</li></ul> <p><b>P3 - Space &amp; Waves</b></p> <ul style="list-style-type: none"><li>• Sound waves and hearing</li><li>• Seasons , day &amp; night</li><li>• Phases of the moon</li><li>• Planets</li><li>• Solar System and ET</li><li>• Crater investigation</li></ul> <p><b>B6 - Plants and photosynthesis</b></p> <ul style="list-style-type: none"><li>• Photosynthesis, equations and energy changes</li><li>• How plants are adapted for photosynthesis</li></ul>	<ul style="list-style-type: none"><li>• Using and rearranging equations is briefly met in yr 8 and built upon in the following years</li></ul> <p><b>Literacy &amp; Oracy:</b></p> <ul style="list-style-type: none"><li>• Encourage group discussion and debate.</li><li>• Communicate ideas clearly &amp; effectively.</li><li>• Make sure spelling and punctuation is accurate</li></ul>			
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<ul style="list-style-type: none"><li>• Role of leaf stomata in gas exchange</li></ul> <p><b>C6 - Further Chemical Reactions</b></p> <ul style="list-style-type: none"><li>• Combustion</li><li>• Oxidation and reduction</li><li>• Reactions of metals and the reactivity series</li><li>• Displacement</li></ul> <p><b>P6 - Forces, Pressure &amp; Moments</b></p> <ul style="list-style-type: none"><li>• Types of force</li><li>• Balanced and unbalanced forces</li><li>• Pressure and moments</li></ul> <p><b>Maths &amp; Science Skills 1</b></p> <ul style="list-style-type: none"><li>• Averages &amp; Uncertainties</li><li>• Significant figures &amp; precision</li><li>• Standard form</li><li>• Units &amp; conversions</li><li>• Ratios &amp; percentages</li><li>• HSW terms</li><li>• ISA investigation 1</li></ul> <p><b>Atomic Structure &amp; Periodic Table</b></p> <ul style="list-style-type: none"><li>• Models of the atom (plum pudding &amp; nuclear)</li><li>• Structure of atom</li><li>• Electron arrangement</li><li>• Mendeleev</li><li>• Modern Periodic Table</li><li>• Groups 1,7, 0</li><li>• Transition metals</li></ul> <p><b>Maths &amp; Science Skills 2</b></p>				
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<ul style="list-style-type: none"><li>• Averages &amp; frequency</li><li>• Writing methods</li><li>• Graph skills</li><li>• Data analysis</li><li>• Rearranging formulae</li><li>• Further HSW terms</li><li>• ISA investigation 2</li></ul> <p><b>Energy Changes</b></p> <ul style="list-style-type: none"><li>• Exothermic &amp; endothermic reactions</li><li>• Reaction profile diagrams</li><li>• Energy changes in reactions (Bond breaking &amp; making)</li><li>• Fuel cells &amp; batteries</li></ul> <p><b>Structure &amp; Bonding</b></p> <ul style="list-style-type: none"><li>• Ionic bonding</li><li>• Covalent bonding</li><li>• Metallic bonding &amp; their properties</li><li>• Simple &amp; giant molecules (including fullerenes &amp; graphene)</li></ul> <p><b>Quantitative Chemistry</b></p> <ul style="list-style-type: none"><li>• Conservation of mass</li><li>• Relative formula mass (Mr)</li><li>• The Mole</li><li>• Limiting reactants</li><li>• Reacting quantities</li><li>• Concentrations &amp; solutions</li></ul> <p><b>Chemical Changes</b></p> <ul style="list-style-type: none"><li>• Reactions of metals</li></ul>				
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<ul style="list-style-type: none"><li>• Displacement reactions</li><li>• Reactivity series</li><li>• Oxidation &amp; reduction</li><li>• Half equations</li><li>• Acids, Bases &amp; Salts</li><li>• Making salts</li><li>• Electrolysis</li></ul> <p><b>Rate &amp; Extent of Chemical Change</b></p> <ul style="list-style-type: none"><li>• Defining &amp; measuring rate of reaction</li><li>• Factors affecting rate of reaction</li><li>• Collision theory and explaining factors affecting rate</li><li>• Reversible reactions</li><li>• Dynamic equilibria</li></ul> <p><b>Organic Chemistry</b></p> <ul style="list-style-type: none"><li>• Crude Oil &amp; Fractional distillation</li><li>• Alkanes</li><li>• Types of Combustion</li><li>• Cracking &amp; Alkenes</li><li>• Alkenes, Alcohols, Carboxylic acids, Esters and Polymers (single chemistry only)</li></ul> <p><b>Chemical Analysis</b></p> <ul style="list-style-type: none"><li>• Pure &amp; impure substances</li><li>• Chromatography</li><li>• Testing for gases</li><li>• Flame tests, testing for cations using NaOH (single chemistry only)</li><li>• Testing for anions (single chemistry only)</li></ul>				
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<ul style="list-style-type: none"><li>• Instrumental analysis (single chemistry only)</li></ul> <p><b>Earth &amp; The Atmosphere</b></p> <ul style="list-style-type: none"><li>• Early atmosphere</li><li>• Modern atmosphere</li><li>• Combustion &amp; Greenhouse effect</li><li>• Climate change</li><li>• Atmospheric pollutants</li></ul> <p><b>Using Resources</b></p> <ul style="list-style-type: none"><li>• Sustainable development</li><li>• Renewable &amp; non-renewable resources</li><li>• Obtaining potable water</li><li>• Purifying water</li><li>• Extracting copper and alloys</li><li>• Life Cycle assessment</li><li>• Reusing, reducing &amp; recycling</li></ul> <p>Single chemistry only</p> <ul style="list-style-type: none"><li>• Corrosion</li><li>• Ceramics, Composites &amp; Polymers</li><li>• Fertilisers &amp; Haber Process</li></ul>				
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