

Science Curriculum Map - Year 8

Term	Units of Study	Curriculum Guidelines	NC –Aims / Focus Points
<p style="text-align: center;">Autumn 1</p> <p style="text-align: center;">Interactions over small and large distances</p>	<p style="text-align: center;">Energy changes Mass and weight Structure and bonding</p>	<ul style="list-style-type: none"> • Changes with temperature in motion and spacing of particles • Internal energy stored in materials. • a simple (Dalton) atomic model • differences between atoms, elements and compounds • chemical symbols and formulae for elements and compounds • conservation of mass changes of state and chemical reactions. • energy changes on changes of state (qualitative) • exothermic and endothermic chemical reactions (qualitative). 	<ul style="list-style-type: none"> • <u>understand</u> and <u>use</u> SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature • <u>use</u> and <u>derive</u> simple equations and carry out appropriate calculations

<p style="text-align: center;">Autumn 2</p> <p style="text-align: center;">Interactions over small and large distances</p>	<p style="text-align: center;">Magnetism Electron magnetism Forces</p>	<ul style="list-style-type: none"> ▪ Forces as pushes or pulls, arising from the interaction between two objects ▪ using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces ▪ moment as the turning effect of a force ▪ forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water ▪ forces measured in newtons, measurements of stretch or compression as force is changed ▪ force-extension linear relation; Hooke's Law as 	<ul style="list-style-type: none"> • <u>present</u> reasoned explanations, including <u>explaining</u> data in relation to predictions and hypotheses • <u>evaluate</u> data, <u>showing awareness of</u> potential sources of random and systematic error • <u>identify</u> further questions arising from their results.
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		<p>a special case</p> <ul style="list-style-type: none"> ▪ work done and energy changes on deformation ▪ magnetic poles, attraction and repulsion ▪ magnetic fields by plotting with compass, representation by field lines ▪ Earth's magnetism, compass and navigation ▪ The magnetic effect of a current, electromagnets, D.C. motors (principles only). 	
<p>Spring 1</p> <p>Movements and interactions</p>	<p>Forces and motion</p> <p>Electricity</p>	<ul style="list-style-type: none"> ▪ Forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only) ▪ change depending on direction of force and its 	<ul style="list-style-type: none"> • <u>use</u> appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety • <u>make</u> and <u>record</u>

		<p>size.</p> <ul style="list-style-type: none">▪ Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge▪ potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current▪ differences in resistance between conducting and insulating components (quantitative).▪ Static electricity▪ separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged	<p>observations and measurements <u>using</u> a range of methods for different investigations; and <u>evaluate</u> the reliability of methods and suggest possible improvements</p>
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		<p>objects</p> <ul style="list-style-type: none"> ▪ the idea of electric field, forces acting across the space between objects not in contact. 	
<p>Spring 2</p> <p>Movements and interactions</p>	<p>Acids and alkalis Chemical and physical change</p>	<ul style="list-style-type: none"> • Defining acids and alkalis in terms of neutralisation reactions • the pH scale for measuring acidity/alkalinity; and indicators • reactions of acids with metals to produce a salt plus hydrogen • reactions of acids with alkalis to produce a salt plus water • what catalysts do. 	<ul style="list-style-type: none"> • <u>Make</u> predictions using scientific knowledge and understanding • <u>select, plan</u> and <u>carry out</u> the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate • <u>use</u> appropriate techniques, apparatus, and materials during fieldwork and laboratory work, <u>paying attention</u> to health and safety

<p>Summer 1</p> <p>Guiding spaceship Earth towards a sustainable future</p>	<p>Carbon Chemistry Resources of materials and energy Energy resources</p>	<ul style="list-style-type: none"> • The order of metals and carbon in the reactivity series • the use of carbon in obtaining metals from metal oxides • properties of ceramics, polymers and composites (qualitative). • Earth as a source of limited resources and the efficacy of recycling • the carbon cycle • the composition of the atmosphere • the production of carbon dioxide by human activity and the impact on climate. 	<ul style="list-style-type: none"> • <u>understand</u> that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review • <u>identify</u> further questions arising from their results.
<p>Summer 2</p> <p>ISA Style module – focus on experimenting skills</p>	<p>Completion of any topics outstanding as some may run over longer than 1 term Plus completion of topic focusing on experimental skills</p>	<ul style="list-style-type: none"> • Investigative and evaluative skills 	<ul style="list-style-type: none"> • <u>select, plan and carry out</u> the most appropriate types of scientific enquiries to test predictions, including <u>identifying</u>

			<p>independent, dependent and control variables, where appropriate</p> <ul style="list-style-type: none">• <u>use appropriate</u> techniques, apparatus, and materials during fieldwork and laboratory work, <u>paying attention</u> to health and safety• <u>present</u> observations and data <u>using</u> appropriate methods, including tables and graphs• <u>interpret</u> observations and data, including identifying patterns and using observations, measurements and data to <u>draw</u> conclusions
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