



Curriculum: Science

**Excellence.
No Excuses.**

Year	AC1	AC2	AC3	AC4
7	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Particle Model • Particulate Nature of Matter • Energy in Matter • Atoms, Elements and Compounds • Physical Changes <p>GCSE Links:</p> <ul style="list-style-type: none"> • P 4.3.1 Changes of state and the particle model • P 4.3.2 Internal energy and energy transfers • C 4.1.1.1 Atoms, Elements and Compounds • C 4.1.2.1 The Periodic Table • P 4.3.3.1 Particle motion in gases 	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Chemical Reactions • Energetics • Photosynthesis • Respiration <p>GCSE Links:</p> <ul style="list-style-type: none"> • C 4.4.1.1 Metal Oxides • C 4.4.2 Reactions of Acids • C 4.6.1.4 Catalysts • C 4.5.1.1 Energy transfer during exothermic and endothermic reactions • B 4.4.1.1 Photosynthetic reaction • B 4.7.2.1 Levels of organisation • B 4.4.2 Respiration 	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Cells and Organisation • Nutrition and Digestion <p>GCSE Links:</p> <ul style="list-style-type: none"> B 4.1.1.2 Animal and plant cells B 4.1.1.5 Microscopy B 4.1.3.1 Diffusion B 4.2.1 Principles of organisation B 4.2.2.1 The human digestive system 	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Gas Exchange • Earth and Atmosphere <p>GCSE Links:</p> <ul style="list-style-type: none"> B 4.2.2.2 The heart and blood vessels (Respiratory system focus) C 4.9.1.1 The proportions of different gases in the atmosphere C 4.9.2 Carbon dioxide and methane as greenhouse gases C 4.10.1.1 Using the Earth's resources and sustainable development C 4.10.2.2 Ways of reducing the use of resources B 4.7.2.2 How materials are cycled
8	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Forces • Balanced Forces • Forces and Motion • Describing Motion <p>GCSE Links:</p> <ul style="list-style-type: none"> P 4.5.1.2 Contact and non-contact forces P 4.5.1.3 Gravity P 4.5.2 Work done and energy transfer P 4.5.3 Forces and elasticity P 4.5.4 Moments, levers and gears (physics only) P 4.5.1.4 Resultant forces P 4.5.6.2.1 Newton's First Law P 4.5.6.2.2 Newton's Second Law P 4.5.6.1.2 Speed P 4.5.6.1.4 The distance–time relationship 	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Pressure • Skeletal and Muscular System • The Periodic Table • Materials <p>GCSE Links:</p> <ul style="list-style-type: none"> P 4.3.3 Particle model and pressure P 5.5 Pressure and pressure differences in fluids (physics only) C 4.1.2 The periodic table C 4.4.1.2 The reactivity series C 4.4.1.3 Extraction of metals and reduction C 4.10.3.3 Ceramics, polymers and composites (physics only) 	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Pure and Impure Substances • Current Electricity • Static Electricity <p>GCSE Links:</p> <ul style="list-style-type: none"> C 4.1.1.2 Mixtures C 4.8.1.1 Pure substances P 4.2.1.1 Standard circuit diagram symbols P 4.2.1.2 Electrical charge and current P 4.2.1.3 Current, resistance and potential difference P 4.2.1.4 Resistors P 4.2.5 Static electricity (physics only) 	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Relationships in an Ecosystem • Magnetism • Space Physics <p>GCSE Links:</p> <ul style="list-style-type: none"> B 4.7.1.1 Communities P 4.7.1 Permanent and induced magnetism, magnetic forces and fields P 4.7.2 The motor effect P 4.8 Space physics (physics only)
9	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Energy Changes and Transfers • Energy Changes in Systems • Calculation of fuel uses and costs in the domestic context • (Recap: Chemical Energetics) • Metabolism <p>GCSE Links:</p> <ul style="list-style-type: none"> P 4.1.1.1 Energy stores and systems P 4.1.1.2 Changes in energy P 4.1.1.3 Energy changes in systems P 4.1.2.1 Energy transfers in a system P 4.1.1.4 Power B 4.4.2.3 Metabolism 	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Waves • (Recap: Earth's Atmosphere) • History of the Atmosphere <p>GCSE Links:</p> <ul style="list-style-type: none"> P 4.6.1 Waves in air, fluids and solids P 4.6.2 Electromagnetic waves P 4.6.3 Black body radiation (physics only) C 4.9.1.2 The Earth's early atmosphere C 4.9.1.3 How oxygen increased C 4.9.1.4 How carbon dioxide decreased 	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Reproduction • Health • Infection and Response <p>GCSE Links:</p> <ul style="list-style-type: none"> B 4.3 Infection and Response 	<p>Topic Overview:</p> <ul style="list-style-type: none"> • Ecology • Chemical Analysis <p>GCSE Links:</p> <ul style="list-style-type: none"> B 4.7 Ecology C 4.8 Chemical Analysis



Achievement Cycle Overview

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Year	AC1	AC2	AC3	AC4
10	<p>Topic Overview: Atomic Structure Cell Processes</p> <p>GCSE Links: 4.1.1.4 Relative electrical charges of subatomic particles 4.1.1.5 Size and mass of atoms 4.1.1.6 RAM 4.1.1.7 Electronic structure 4.1.3 Properties of transition metals (chemistry only) 4.1.1.1 Eukaryotes and prokaryotes 4.1.1.3 Cell specialisation 4.1.1.4 Cell differentiation 4.1.1.6 Culturing microorganisms (biology only) 4.1.2 Cell division 4.1.3.2 Osmosis 4.1.3.3 Active transport</p>	<p>Topic Overview: Bonding & Structure Energy & Electricity Using Resources</p> <p>GCSE Links: 4.2 (Bonding, structure, and the properties of matter) 4.1.2.2 Efficiency 4.1.3 National and global energy resources 4.2.2 Series and parallel circuits 4.2.3 Domestic uses and safety 4.2.4 Electrical energy transfers</p>	<p>Topic Overview: Chemical Changes Homeostasis & Response</p> <p>GCSE Links: 4.4.1.4 Oxidation and reduction in terms of electrons (HT only) 4.4.2.5 Titrations (chemistry only) 4.4.2.6 Strong and weak acids (HT only) 4.4.3 Electrolysis 4.5.1.2 Reaction Profiles 4.5.1.3 The energy change of reactions (HT only) 4.5.2 Chemical cells and fuel cells (chemistry only) 4.5.1.1 Energy transfer during exothermic and endothermic reactions</p>	<p>Topic Overview: Rate of Reaction/P.S. Quantitative Chemistry</p> <p>GCSE Links: 4.6 (Rate of Reaction) 4.4.1.2 Rate of photosynthesis 4.4.1.3 Uses of glucose from photosynthesis</p>
11	<p>Topic Overview: Forces & Motion Organic Chemistry</p> <p>GCSE Links: 4.5.1.1 Scalar and vector quantities 4.5.5 Pressure and pressure differences in fluids (physics only) 4.5.6.1.1 Distance and displacement 4.5.6.1.3 Velocity 4.5.6.1.5 Acceleration 4.5.6.2.3 Newton's Third Law 4.5.6.3 Forces & braking 4.5.7 Momentum (HT only) 4.7 (Organic Chemistry)</p>	<p>Topic Overview: Organisation Inheritance, variation and evolution</p> <p>GCSE Links: 4.2.2.1 Enzymes 4.2.2.2 The heart & blood vessels 4.2.2.3 Blood 4.2.2.4 Coronary heart disease: a non-communicable disease 4.2.2.5 Health issues 4.2.2.6 The effect of lifestyle on some non-communicable diseases 4.2.2.7 Cancer 4.2.3 Plant tissues, organs and systems 4.5 (Homeostasis & response) 4.6 (IVE)</p>	Revision	Revision

NB: Topic titles have been taken from national curriculum where possible