

Subject	Science		
	Interpretation of National Curriculum into Year group Endpoints		
Year	Term 1	Term 2	Term 3
9	<p>Students will describe and explain the concepts of:</p> <p><b>B1 Cell biology</b></p> <ul style="list-style-type: none"> <li>• cells as the basic structural unit of all organisms; adaptations of cells related to their functions; the main sub-cellular structures of eukaryotic and prokaryotic cells</li> <li>• stem cells in animals and meristems in plants</li> <li>• the need for transport systems in multicellular organisms, including plants</li> </ul> <p><b>C6 The rate and extent of chemical change</b></p> <ul style="list-style-type: none"> <li>• factors that influence the rate of reaction: varying temperature or concentration, changing the surface area of a solid reactant or by adding a catalyst</li> <li>• factors affecting reversible reactions</li> </ul> <p><b>P3 Particle model of matter</b></p> <ul style="list-style-type: none"> <li>• relating models of arrangements and motions of the molecules in solid, liquid and gas phases to their densities</li> <li>• melting, evaporation, and sublimation as reversible changes</li> <li>• calculating energy changes involved on heating, using specific heat capacity; and those involved in changes of state, using specific latent heat</li> </ul> <p><b>P1 Energy</b></p> <ul style="list-style-type: none"> <li>• energy changes in a system involving heating, doing work using forces, or doing work using an electric current: calculating the stored energies and energy changes involved</li> <li>• power as the rate of transfer of energy</li> </ul>	<p>Students will describe and explain the concepts of:</p> <p><b>B2 Organisation</b></p> <ul style="list-style-type: none"> <li>• carbohydrates, proteins and lipids as key biological molecules</li> <li>• enzymes</li> <li>• factors affecting the rate of enzymatic reactions</li> <li>• the relationship between the structure and functions of the human circulatory system</li> </ul> <p><b>C7 Organic chemistry</b></p> <ul style="list-style-type: none"> <li>• carbon compounds, both as fuels and feedstock, and the competing demands for limited resources</li> <li>• fractional distillation of crude oil and cracking to make more useful materials</li> </ul> <p><b>C8 Chemical analysis</b></p> <ul style="list-style-type: none"> <li>• identification of common gases distinguishing between pure and impure substances</li> <li>• separation techniques for mixtures of substances: filtration, crystallisation, chromatography, simple and fractional distillation</li> </ul> <p><b>P2 Electricity</b></p> <ul style="list-style-type: none"> <li>• measuring resistance using p.d. and current measurements</li> <li>• exploring current, resistance and voltage relationships for different circuit elements; including their graphical representations</li> <li>• quantity of charge flowing as the product of current and time</li> <li>• drawing circuit diagrams; exploring equivalent</li> </ul>	<p>Students will describe and explain the concepts of:</p> <p><b>B4 Bioenergetics</b></p> <ul style="list-style-type: none"> <li>• the importance of cellular respiration; the processes of aerobic and anaerobic respiration</li> <li>• photosynthesis as the key process for food production and therefore biomass for life</li> <li>• the process of photosynthesis</li> <li>• factors affecting the rate of photosynthesis</li> </ul> <p><b>C9 Chemistry of the atmosphere</b></p> <ul style="list-style-type: none"> <li>• evidence for composition and evolution of the Earth's atmosphere since its formation</li> <li>• evidence, and uncertainties in evidence, for additional anthropogenic causes of climate change</li> <li>• potential effects of, and mitigation of, increased levels of carbon dioxide and methane on the Earth's climate</li> <li>• common atmospheric pollutants: sulphur dioxide, oxides of nitrogen, particulates and their sources</li> </ul> <p><b>C10 Using resources</b></p> <ul style="list-style-type: none"> <li>• the Earth's water resources and obtaining potable water.</li> <li>• life cycle assessment and recycling to assess environmental impacts associated with all the stages of a product's life</li> <li>• the viability of recycling of certain materials</li> </ul> <p><b>P4 Atomic structure</b></p> <ul style="list-style-type: none"> <li>• the nuclear model and its development in the light of changing evidence</li> <li>• masses and sizes of nuclei, atoms and small molecules</li> </ul>

Subject	Science		
	Interpretation of National Curriculum into Year group Endpoints		
Year	Term 1	Term 2	Term 3
	<ul style="list-style-type: none"> <li>• conservation of energy in a closed system, dissipation</li> <li>• calculating energy efficiency for any energy transfers</li> <li>• renewable and non-renewable energy sources used on Earth, changes in how these are used.</li> </ul>	<p>resistance for resistors in series</p> <ul style="list-style-type: none"> <li>• the domestic a.c. supply; live, neutral and earth mains wires, safety measures</li> <li>• power transfer related to p.d. and current, or current and resistance.</li> </ul>	<ul style="list-style-type: none"> <li>• differences in numbers of protons, and neutrons related to masses and identities of nuclei, isotope characteristics and equations to represent changes</li> <li>• ionisation; absorption or emission of radiation related to changes in electron orbits</li> <li>• radioactive nuclei: emission of alpha or beta particles, neutrons, or gamma rays, related to changes in the nuclear mass and/or charge</li> <li>• radioactive materials, half-life, irradiation, contamination and their associated hazardous effects, waste disposal</li> <li>• nuclear fission, nuclear fusion and our Sun's energy</li> </ul>