

Science Curriculum Overview

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	Forces, organisms In forces we cover gravity, speed-distance-time graphs and introduce calculations. In organisms students learn about the skeleton and movement then are taught the structure of cells.	Matter, energy The matter topic covers changes of state, the particle model and atomic structure. Students learn the unit of energy and investigate energy in food and other stores of energy.	Genes, reactions In the genes topics students learn about variation between living things, puberty and reproduction. In the reactions topic we cover acids and alkalis, practical skills such as making salts and reactions of metals.	Electricity, ecosystems We introduce students to electrical current, charge and potential difference and they build electric circuits. In ecosystems students learn how living things interact with each other and the environment, including pollination and seed dispersal.	Earth, waves We teach the structure of the earth, types of rocks and outer space. The waves topic focuses on sound waves and light waves.	Practical skills and knowledge mastery Students focus on practical skills and report writing. We practise graph drawing and maths in science. Atoms, cells and the particle model are revisited at this time to secure the knowledge needed to start year 8.
Year 8	Energy, Earth Students learn about energy transfers and the relationship between energy and work. The earth topic focuses on climate change, global warming and the human impact on the earth.	Genes, forces We teach about genetics, evolution and maintaining biodiversity in the genes topic. Students are introduced to friction, drag, turning forces and pressure in the forces topic.	Reactions, ecosystems In the reactions topic students learn about energy changes in chemical reactions and carry out experiments to demonstrate this. Through learning about respiration and photosynthesis, students learn about the needs of organisms and how they obtain resources from the environment.	Waves, electromagnetism Students learn about water waves, radiation and carry out an experiment to model waves. The phenomenon of magnetism is revisited and students make electromagnets.	Matter, organisms The structure of an atom is revisited and students learn about the periodic table and properties of elements. In the organisms topic the effect of smoking alcohol and drugs is taught.	Organisms, recap Students learn about the gas exchange system and the digestive system. We recap the core knowledge from biology, chemistry and physics that will support students with accessing year 9.

Year 9	<p>Cell Structure and Transport, atomic structure and the periodic table</p> <p>Cells are taught 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</p> <p>Students carry out practical work to learn separation technique and learn about atomic structure in detail and arrangement of elements in the periodic table.</p>	<p>Cell division, particle model</p> <p>Students learn how cells grow for growth and repair. Stem cells and the ethics surrounding their use are discussed.</p> <p>In the particle topic students learn about radiation, density and how the energy of particles impacts matter.</p>	<p>Organisation, bonding</p> <p>In organisation students learn about cells, tissues, organs and organ systems, including the digestive system.</p> <p>In the bonding topic students are taught about ionic, covalent and metallic bonding and the properties of substances.</p>	<p>Organising animals and plants, energy</p> <p>Students learn the structure of the heart and blood vessels and the structure of plants.</p> <p>The energy topic starts with conservation and dissipation of energy and energy stores.</p>	<p>Energy transfers, communicable diseases</p> <p>The energy topic continues as students learn how energy is transferred and uses of insulation to reduce energy dissipation.</p> <p>Students are taught about how diseases spread and the pathogens that cause them.</p>	<p>Energy resources, non-communicable diseases</p> <p>We cover renewable and non-renewable resources and the advantages and disadvantages of using various energy resources.</p> <p>Students learn about how diseases are treated and non-communicable diseases, such as cancer and coronary heart disease.</p>
Year 10	<p>Chemical changes, energy changes, photosynthesis</p> <p>Students will learn about reduction and oxidation and the reactivity of metals, acids and alkalis. We will investigate the energy changes that take place during different chemical reactions.</p>	<p>Electricity, respiration</p> <p>In the electricity topic we investigate circuits and learn about efficiency of electrical appliances.</p> <p>The respiration topic covers aerobic and anaerobic respiration in plants, animals and yeast, uses of yeast in industry and the effect</p>	<p>Chemical calculations, rate of reaction, the nervous system</p> <p>We teach how to calculate relative atomic mass and how to balance chemical equations. The factors affecting rate of reaction are investigated and reversible reactions are also studied.</p>	<p>Forces, hormonal coordination</p> <p>In the forces topic students investigate motion, balanced and unbalanced forces and learn how to calculate force values.</p> <p>The hormonal coordination topic includes control of blood glucose concentration</p>	<p>The Earth's atmosphere and resources, reproduction</p> <p>Students learn about the composition of the Earth's atmosphere throughout history and the impact of humans on the atmosphere and climate. They learn</p>	<p>Variation and evolution, waves</p> <p>We teach the process of evolution by natural selection and how the fossil record tells us about organisms from the past. We study selective breeding, genetic engineering and investigate the ethics surrounding this topic.</p>

	<p>We teach the factors affecting photosynthesis and how plants use the glucose produced. Students will investigate the rate of photosynthesis in pond weed.</p>	<p>of exercise on humans.</p>	<p>The structure of the human nervous system is learnt, reflex actions and a factor affecting human reaction time is investigated.</p>	<p>and the hormones in human reproduction.</p>	<p>about natural resources and how they are used by humans.</p> <p>The reproduction topic includes cell division, DNA, genetic inheritance and inherited diseases.</p>	<p>In the waves topic students learn the properties of waves and the about electromagnetic waves and their uses.</p>
<p>Year 11</p>	<p>Organic chemistry, chemical analysis, interdependence</p> <p>Students learn about the different organic chemicals and their use as fuels. In chemical analysis students carry out tests for various gases, investigate chromatography and learn about mixtures.</p> <p>We teach the relationship between organisms and the environment in which they live and investigate distribution and abundance of species.</p>	<p>Ecosystems, electromagnetism</p> <p>The ecosystems topic explores feeding relationships, materials cycling, the importance of biodiversity and the impact humans have on the natural living world.</p> <p>Students learn about magnetism and the working of a motor. They investigate factors affecting the strength of an electromagnet.</p>	<p>Revision, consolidation and exam preparation</p>	<p>Revision, consolidation and exam preparation</p>	<p>Revision, consolidation and exam preparation</p>	<p>GCSE examinations</p>