

Key Stage 3: Year 7

Overall Curriculum Goals					
<p>These big ideas underpin the knowledge they will require for GCSE and beyond, but more importantly provide the students with a framework of knowledge that helps them to understand the world they live in. It encourages students to consider the world around them, the process and the materials that make up life and the universe, as well as the processes of science as a discipline.</p> <p>Big Ideas in science:</p> <ul style="list-style-type: none"> • Forces • Energy • Waves • Particles and matter • Chemical reactions • Materials • Cells • The human body • Plants and environment <p>Throughout KS3 and KS4, working scientifically skills are woven into each topic. Students develop the skills required to design, implement and evaluate a scientific investigation, as well as an understanding of the process of science in shaping our understanding of the universe. They will consider ethical questions, and those questions that cannot be answered by science. Students will have the opportunity to consider a range of careers linked to science.</p>					
Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
7K Forces 7G Particles 7A Cells		7C Muscles and bones 7I Energy 7H Chemical Reactions		7B Reproduction (plant and human) 7L Sound	
Key Vocabulary/Concepts/Ideas		Key Vocabulary/Concepts/Ideas		Key Vocabulary/Concepts/Ideas	
<p>Forces builds on existing knowledge from KS2 to study and demonstrate forces in action, including developing ideas around resistive forces. Pupils will also explore proportional relationships through the context of Hooke's Law.</p> <p>In Particles pupils gain an understanding of particles, states of matter and changes of state. Pupils will also have the opportunity to develop practical skills including the use and safe set-up of a Bunsen burner and scientific drawing, skills that will be integral to their science studies.</p> <p>In Cells, pupils learn how scientific advances in microscopes allowed scientists to discover cells and cellular structure. Pupils also study how to use a microscope and prepare a slide</p>		<p>Pupils learn how cells work together to form some of the organ systems of the human body. This topic encourages pupils to understand how their own body systems work including movement of muscles and joints, breathing and circulation. They also look at the impact of drugs on body systems.</p> <p>Pupils will explore the principle of conservation of energy through the model of energy stores and transfers. They will evaluate different types of fuel and discuss alternative sources of energy for the future.</p> <p>Pupils will study the structure of the atom, the difference between elements and compounds and how to use the periodic table. Pupils will also study a range of reactions; including endothermic and exothermic reactions, examples of these are demonstrated using real-life examples such as chemical icepacks. They will have the opportunity to carry out investigations to collect continuous and categoric data.</p>		<p>Pupils will learn about the mechanisms of plant and animal reproduction. They discover the importance of insects in flower pollination and draw comparisons between plant and human reproduction. Pupils also study the human reproductive system and topics such as puberty, pregnancy and the menopause which are important for pupil wellbeing.</p> <p>In sound, pupils will develop their understanding from primary phase of how sounds are made, to look at how sound travels, and the properties of sound waves. They will link back to their work on particles from the Autumn term to investigate how sound travels in solids, liquids and gasses.</p>	
CIAG		CIAG		CIAG	
Car designer / Product testing Manipulation of equipment Biologist / Pathologist		Healthcare professions Working in the renewables sector Manipulation of equipment		Midwifery / Agriculture Audio engineering	

Key Stage 3: Year 8

Overall Curriculum Goals					
<p>These big ideas underpin the knowledge they will require for GCSE and beyond, but more importantly provide the students with a framework of knowledge that helps them to understand the world they live in. It encourages students to consider the world around them, the process and the materials that make up life and the universe, as well as the processes of science as a discipline.</p> <p>Big Ideas in science:</p> <ul style="list-style-type: none"> • Forces • Energy • Waves • Particles and matter • Chemical reactions • Materials • Cells • The human body • Plants and environment <p>Throughout KS3 and KS4, working scientifically skills are woven into each topic. Students develop the skills required to design, implement and evaluate a scientific investigation, as well as an understanding of the process of science in shaping our understanding of the universe. They will consider ethical questions, and those questions that cannot be answered by science. Students will have the opportunity to consider a range of careers linked to science.</p>					
Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
<p>8L Earth and Space</p> <p>7E Pure and Impure</p> <p>7D Ecosystems</p> <p>7J Current Electricity</p>		<p>8F Periodic Table</p> <p>8A Food and Nutrition</p> <p>8I Energy Transfers</p>		<p>8E Combustion</p> <p>8I Fluids</p> <p>8D Unicellular Organisms</p>	
Key Vocabulary/Concepts/Ideas		Key Vocabulary/Concepts/Ideas		Key Vocabulary/Concepts/Ideas	
<p>Students will build on learning about space from KS1 and KS2 to think about the Earth's place in space, what causes the seasons and the role of gravity in keeping the solar system together. They will explore the process of science when looking at how ideas about the observable universe have changed, and will look beyond our solar system into the wider universe for signs of extra-terrestrial life.</p> <p>Students will practically explore pure and impure substances, developing a range of practical techniques such as a filtration, chromatography and distillation to separate mixtures.</p> <p>Pupils look at variation within populations, including collecting continuous and categorical data. They then study how variation leads to organisms being well-adapted to their habitats, including undertaking some fieldwork to sample organisms in local habitats. Finally they investigate the effect of changes in the habitat on populations of organisms.</p> <p>Students will link back to their prior learning on electricity, familiarising themselves with the more complex equipment to build circuits and with the circuit symbol notation. They will explore patterns in how circuits behave, and consider the validity of a range of models to represent how circuits work.</p>		<p>Students will explore the process of science by studying how the modern periodic table came into being. They will then learn about the typical properties and uses of some of the groups within the periodic table.</p> <p>This topic considers nutrition, and the requirements of a balanced diet. It builds on prior learning on organ systems to explore the function of each organ in the digestive system. Finally students will learn about the possible health concerns resulting from unhealthy or disordered eating.</p> <p>Developing ideas about heat transfer, students will explore conduction convection and radiation through models and practical experiments. They will then apply their learning to develop ideas that will inform housing designs for super-insulated, energy efficient homes.</p>		<p>Students look at typical combustion reactions, the process of oxidation and fire safety. They then explore the detriments of combustion reactions including air pollution, global warming and the more local impacts of moorland fires.</p> <p>In the fluids topic, students link back to their prior learning about the particle model and use it to explain differences in density of materials, including taking appropriate measurements to calculate density. They then learn about pressure in fluids, and how this affects buoyancy.</p> <p>In this topic students will learn about microscopic organisms including bacteria, fungi and protoctists. They will study the role of decomposers as part of the wider carbon cycle.</p>	
CIAG		CIAG		CIAG	
<p>Astronomer / Space scientist / Cosmologist</p> <p>Forensic science / Materials scientist</p> <p>Architect / Engineer</p> <p>Ecologist</p>		<p>Materials scientist</p> <p>Electrical engineer</p> <p>Food Scientist / dietician / school nurse / sports scientist</p>		<p>Fire fighter / environmental scientist</p> <p>Marine engineering / Commercial shipping</p> <p>Pathologist</p>	

<p>Sports scientist / healthcare Geologist / materials scientist Optician / Optometrist / Photographer / Lighting engineer</p>	<p>Farming Geologist / materials scientist Space scientist</p>	<p>Ecologist / Conservationist Product design / Miner / Metalworker Automotive and aeronautical engineering</p>		
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