Science Year 9 Curriculum Overview

What is the Year 9 Science curriculum aiming to achieve?		
What do we want our Year 9 Scientists to be like?	How are we building on prior learning?	How can parents/carers support their child's learning?
• Be excited and enthusiastic about the scientific world around us • Be safe and competent practical scientists • Be able to make links between observations and scientific theory • Be good verbal and written communicators using key terms • Have furthered their understanding of key concepts in all three Sciences disciplines	• We will make links to and build on the Biology, Chemistry and Physics topics from KS2 • We will build on our working scientifically skills in the areas of analysis, communication, enquiry and problem solving	• Talk to the pupils about what they are learning about in lesson • Be curious about the world around you and discuss with your child • Support your child with homework tasks • Help your child consolidate their school learning e.g. using BBC Bitesize or watching scientific documentaries

How are we organising the Year 9 Science curriculum?			
	Autumn Term	Spring Term	Summer Term
Topics	**Biology**: Evolution and Inheritance **Chemistry**: Climate and Earth Resources **Physics**: Magnetism and Electromagnetism Wave Effects and Wave Properties	**Biology**: Cell Biology **Chemistry**: Atomic Structure and the Periodic Table **Physics**: Energy	**Biology**: Enzymes **Chemistry**: Chemical Changes **Physics**: Particle Model of Matter
Threshold Concepts	Biology: The huge variety of living organisms on planet Earth is the result of natural selection. The genetic material of an organism is its DNA, this is passed on to offspring during reproduction. Chemistry: There are finite resources on planet Earth which are naturally recycled. Physics: Magnetic materials, the Earth and electromagnets can create magnetic fields. When waves travel through a material, they can cause the particles to move.	Biology: The cell is the smallest unit of all living organisms. Chemistry: All substances on planet Earth are made from chemical elements which are arranged in the Periodic Table. The atom is the smallest particle of a chemical element that can exist. Atoms react together during chemical reactions. Physics: Energy is stored and transferred from one form to another.	Biology: Enzymes are biological catalysts which speed up reactions and have a fundamental role in digestion. Chemistry: Metals can be extracted from their ores. Chemical reactions always involve a transfer of energy. Dry samples of salts can be made and prepared. Physics: Substances can exist as solids, liquids and gases. Substances can change state with an input of energy. The density of a substance is how much mass is in a given volume.
Skills	Understanding how theories have developed over time. Interpreting observations and data. Presenting explanations which relate data to hypotheses. Use of SI units. Using prefixes and powers of ten for orders of magnitude. Everyday applications of science. Interconvert units. Change the subject of an equation and substitute values into an equation. Use of decimal and standard form. Use of appropriate significant figures.	Understand how scientific theories develop over time. Use of models to represent scientific processes. Explaining everyday applications of science. Evaluate risks in practical science. Recognise the importance of peer reviewed results. Planning investigations to make observations exploring phenomena. Recognise and use expressions in decimal form, standard form and use ratios, fractions and percentages. Carrying out mathematical analysis. Interpreting observations and presenting explanations.	Observing organisms. Interpreting information from tables, diagrams and graphs. Understanding how scientific theories have developed over time. Use of models to develop explanations. Recognise the importance of peer reviewed results. Planning investigations to make observations exploring phenomena. Use of SI units and prefixes and powers of ten for orders of magnitude. Translating graphical information into numerical form.

		Use of scientific vocabulary Calculating rates of processes.	
Enrichment within the curriculum			
Cross curricular links	• Mathematics (numerous graphical and algebraic applications). • Food Science (Digestion and Enzymes) • Humanities (Ecology and distribution of species)		
Extra-curricular opportunities			

What are the intended outcomes of the Year 9 Science curriculum?			
	Autumn Assessment	Spring Assessment	Summer Assessment
Opportunities to show progress (Assessments)	**Biology**: Evolution and Inheritance Test **Chemistry**: Climate and Earth Resources test **Physics**: Magnetism and Electromagnetism Test, Wave Effects and Wave Properties Test	**Biology**: Cell Biology Test **Chemistry**: Atoms and the Periodic Table test **Physics**: Energy Test	**Biology**: Enzymes Test **Chemistry**: Chemical Changes Test **Physics**: Particle Model of Matter Test
Impact on personal development (SMSC)	Spiritual understanding – science is the study of nature and the curriculum aims to bring about the awe and wonder of the natural world. Social – working together in groups to investigate science practically and understand how science affects society.		
Preparation for the next stage of education	The topics studied in Year 9 are the foundation for GCSE and A Level in Biology, Chemistry and Physics and Combined Sciences which prepare students to be able to follow careers in medicine, engineering, health care, sports science, computer science and the world of finance to name but a few of the pathways available to scientists.		