

Science Curriculum Map

Key = matching colours denote links between topics either in content or skills across year groups and key stages.

BIOLOGY	CHEMISTRY	PHYSICS
ECOSYSTEMS	THE EARTH	FORCES
ORGANISMS	REACTIONS	ENERGY
GENES	MATTER	ELECTRICITY
		WAVES
SCIENTIFIC SKILLS	REVISION & EXAMS	

KEY STAGE 3	7	Investigation skills	Particle model	Movement	Specialised cells	Reproduction	Variation
		Cells	Speed and Gravity	Acids and Alkalis	Sound	Separating mixture	Cost & transfer
	8	Interdependence	Heathy diet	Respiration	Digestion	The rock cycle	Metals & non-metals
		Elements	Electricity	The periodic table	The universe	Forces, contact, and pressure	Photosynthesis
	9	Breathing	Electromagnetism	Properties and effects of waves	Climate & Using resources	Cells and specialised cells	Cell division and reproduction
		Chemical reactions and energy	Evolution	Inheritance	Light	Energy	Atomic structure and states of matter

By the end of key stage 3, pupils will develop a deeper understanding of a range of scientific ideas in the biology, chemistry, and physics topics. Pupils will begin to see the connections between these areas and become aware of the big ideas underpinning scientific knowledge, such as the links between structure and function in living organisms, the particulate model, interactions of matter in all its forms, and the resources and means of transfer of energy. Pupils are encouraged to relate scientific explanations to phenomena in the world around them and start to use modelling and abstract ideas to develop and evaluate explanations. Pupils will understand that science is about working objectively and scientifically, using the correct vocabulary, mathematical units, and representations. Pupils will be taught investigation skills explicitly at the beginning of year 7 and then develop this through each topic at KS3, deciding on the appropriate type of scientific enquiry to undertake to answer their own questions and develop a deeper understanding of factors to be considered when collecting, recording, and processing data. They should evaluate their results and identify further questions.

KEY STAGE 4	10	Specialised cells and transport	Cell division	Organisation, plants, and animals	Infection and response	Infection and response	Bioenergetics (photosynthesis)
		Atomic structure and periodic table	Organisation and digestion	Quantitative chemistry	Chemical changes	Chemical changes (electrolysis)	Chemical changes (reactions)
		Energy	Bonding, Structure, and properties of matter	Electricity	Atomic structure	Forces	Energy changes
		Particle model	Electricity	Electricity	Forces	Forces	
	11	Homeostasis and response	Homeostasis and response	Inheritance, variation, and evolution	Ecology	GCSE REVISION AND EXAMS	
		Rates of reactions	Organic chemistry	Chemical analysis	Chemistry of the atmosphere		
Forces	Waves	Electromagnetism	Space Physics				

By the end of key stage 4, pupils will have developed scientific knowledge and understanding through the disciplines of biology, chemistry, and physics. Pupils will have obtained an understanding of the nature, process, and methods of science, through different scientific enquiries, that will help them to answer questions about the world around them. Moreover, pupils will have developed and learnt how to apply observation, practical, modelling, enquiry, and problem-solving skills, in the laboratory, the field, and in other learning environments. Pupils will also have furthered their ability to evaluate claims based on science through critical analysis of methodology, evidence, and conclusions, both quantitatively and qualitatively. Above all, pupils will have developed curiosity, insight, and appreciation of science and its relevance in their everyday life.

KEY STAGE 5	12	BIO	Biological molecules		Cells, structure, the cell cycle, and transport		Substance exchange, gas exchange, and digestion		Genetic information (including variation and biodiversity)		
		CHEM	Atomic structure and chemical bonding		Organic chemistry and amount of substances		Organic chemistry, kinetics, and energetics		Inorganic chemistry, chemical equilibria, and REDOX		Born-Haber cycles and optical isomers
		PHYS	Motion, momentum, and energy			Fluids and solid material properties		Electrical quantities and circuits			Waves and the particle nature of light
		Applied science	Principles and Applications of Biology			Principles and Applications of Chemistry		Principles and Applications of Physics			Practical scientific procedures and techniques
	13	BIO	Energy transfers		Organisms and the environment		Genetics and ecosystems		The control of gene expression		
		CHEM	Carbonyl chemistry and thermodynamics		Rate equations and benzene chemistry		Equilibrium constants and amine, amino acids, proteins, polymers, and DNA		Electrode potential, EC cells, and organic analysis		Inorganic chemistry, acids, and bases
		PHYS	Momentum and circular motion	Nuclear and particle physics	Electric and magnetic fields	Space and gravitational fields	Thermodynamics heat and temperature	Oscillations (simple harmonic motion)	Nuclear radiation (radioactivity)		
		Applied science	Science Investigation skills								
	A LEVEL REVISION AND EXAMS										

By the end of KS5, pupils will be able to expand on key theories to build an in-depth knowledge and comprehensive understanding of the key concepts that underpin each discipline. Pupils will be able to solve problems and apply scientific knowledge to practical contexts, applying scientific methods and practices, such as being able to comment on experimental design, and evaluate scientific methods. In physics, they will be able to apply key theories to real world applications, with links to degree level physics and engineering. In chemistry, they will apply key theories learnt to determine the mechanics and complexities of chemical reactions, to build a foundation for transfer to higher education chemistry and engineering. In biology, they will use their knowledge to understand real world applications of technology and genetics, to explain inheritance and the development of genetic engineering and modern medicine.