

**Year 7 - 9 Curriculum Map
and
Skills Descriptors
Science**

Practical Skills

Mathematical application

Literacy

Apparatus

Scientific Techniques

Science Capital

Year/Term	Unit of Work	CORE KNOWLEDGE	KEY SKILLS
7 Autumn term Biology	Cells and tissues	Use of microscopes Structure and function of cells How cells are specialised Simple and complex organisms	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Autumn term Biology	Reproduction of plants	Male and female (human) reproductive systems Puberty and the menstrual cycle Sexual intercourse and reproduction Pregnancy and birth Flowers Seed and fruit formation Seed dispersal	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science
7 Autumn term Chemistry	Particles	Arrangement of particles in solid, liquid and gases How particles change state Diffusion and gas pressure Introduction to Density	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Autumn term Chemistry	Atoms and Elements	What is an atom? Atomic structure What is an element? Measuring the physical properties of elements	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Autumn term Physics	Energy Transfers	How energy is stored? How heat transferred and what is thermal store of energy? What is work done and gravitational store of energy? Energy from fuels Energy and power	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital

7 Autumn term Physics	Forces and effects	Forces and interactions Effect of forces on shape Balanced and unbalanced forces Friction forces	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Spring term Biology	Environment and adaptation	Organisms and their habitats Food chains and food webs Competition and cooperation Human effects on the environment	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Spring term Biology	Variation and classification	The variety of life Variation in living things Genetic variation Environment variation	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Spring Chemistry	Acids and Alkalis	Everyday acids and alkalis Indicators and pH Dilution and safety Neutralisation	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital

Year/Term	Unit of Work	CORE KNOWLEDGE	KEY SKILLS
7 Spring term Chemistry	Pure and impure substances	Pure and impure substances Dissolving and solutions Factors affecting solubility Separating mixture – distillation, evaporation, chromatography	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Spring Physics	Electricity	Electric current and potential difference Series and parallel circuits Resistance Resistance calculations	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Summer Physics	Energy Resources	How do we get energy from the Sun? How do we get energy from fossil fuels? How do we get energy from moving water? More renewable resources.	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Summer Biology	Food and Digestion	Healthy eating – 7 food groups Food tests – starch, protein, lipids Digestion system – enzymes and absorption	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Summer Chemistry	Chemical reactions	Observing chemical change Atoms and molecules in reactions – law of conservation Testing gases Writing chemical equations	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques

			Science Capital
7 Summer Chemistry	Compounds	What are compounds? Using chemical symbols to predict chemical equations Mixtures – comparison to compounds Conservation of matter	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
7 Summer Physics	Motion	Effect of forces on speed Studying the effect of motion Falling objects Streamlining.	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Autumn Biology	Reproduction of humans	Male and female (human) reproductive systems Puberty and the menstrual cycle Sexual intercourse and reproduction Pregnancy and birth	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Autumn Chemistry	Periodic Table	A guided tour Developing the Periodic Table Spotting patterns Predicting properties	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Autumn Chemistry	Extracting metals	The reactivity series Extracting with carbon Extracting with electricity Using metals	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital

8 Autumn Physics	Domestic and static electricity	Domestic electricity and power Paying for electricity Static electricity Effects of static electricity	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Autumn Physics	Waves and sound	Wave basics Sound waves Sound and ultrasound Speed of sound and echoes	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Spring Biology	Muscles and bones	The skeletal system Muscles and movement Joints and movement	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Spring Biology	Inheritance and evolution	Variation Genes, chromosomes and DNA Natural and artificial selection Extinction	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Spring Chemistry	Reactions of acids	Reactions of acids Compounds and acidity Atoms and molecules in neutralisation Making pure salt	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital

8 Spring Chemistry	Describing reactions	Types of chemical reactions Energy transfer in reactions Temperature and catalysts Concentration and surface area	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Spring Physics	Light	Travelling light Reflection and refraction Focusing light Coloured light	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Summer Physics	Application of forces	Turning moments Levers Pressure Pressure in fluids Floating and sinking	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Summer Biology	Drugs and health	Medicines and health Legal recreational drugs Illegal drugs	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Summer Biology	Microbes	Micro – organisms Defence against disease Vaccines and antibiotics	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital

8 Summer Chemistry	Earth and atmosphere	The Earth and its atmosphere The rock cycle 1 The rock cycle 2 Human activity Recycling	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
8 Summer Physics	Heat transfer	Conduction Convection Radiation Insulation	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital

Year/Term	Unit of Work	CORE KNOWLEDGE	KEY SKILLS
9 Autumn Biology	Lungs and gas exchange	The breathing system Gas exchange Breathing	Practical Skills Mathematical application Literacy

		The heart and circulatory system	Apparatus Scientific Techniques Science Capital
9 Autumn Biology	Respiration	Aerobic respiration Anaerobic respiration and exercise Anaerobic respiration in micro-organisms	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
Year 9 Autumn	Photosynthesis	The importance of plants Photosynthesis equation Structure and function of leaves Mineral and fertilisers	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
Year 9 Autumn	Magnets and electromagnets	What is magnetism? How can you draw magnetic fields? Electromagnets and how they are used	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
9 Autumn Biology	Cell biology	Cells and microscopes recap Differentiation and stem cells Transport in cells Exchanging surfaces and surface area calculations	Practical Skills Mathematical application Literacy Apparatus

			<p>Scientific Techniques</p> <p>Science Capital</p>
9 Autumn Chemistry	Atoms and periodic table	<p>Atoms, elements and compounds</p> <p>Writing equations</p> <p>Purifying techniques</p> <p>History of the atom</p> <p>Development of periodic table</p> <p>Metals and Non-metals</p> <p>Group 1,7, 0</p>	<p>Practical Skills</p> <p>Mathematical application</p> <p>Literacy</p> <p>Apparatus</p> <p>Scientific Techniques</p> <p>Science Capital</p>
9 Spring Physics	Energy	<p>Stores and systems</p> <p>Energy transfers</p> <p>Potential energy</p> <p>Specific heat capacity</p> <p>Power</p> <p>Efficiency</p> <p>Renewable energy</p>	<p>Practical Skills</p> <p>Mathematical application</p> <p>Literacy</p> <p>Apparatus</p> <p>Scientific Techniques</p> <p>Science Capital</p>
9 Spring Biology	Organisation	<p>Digestion</p> <p>Enzymes</p> <p>Lungs</p> <p>Circulatory system</p> <p>Cardiovascular disease</p> <p>Plant organisation</p>	<p>Practical Skills</p> <p>Mathematical application</p> <p>Literacy</p> <p>Apparatus</p> <p>Scientific Techniques</p> <p>Science Capital</p>
9 Spring Chemistry	Structure and bonding	<p>Ionic bonding</p> <p>Covalent bonding</p> <p>Metallic bonding</p> <p>States of matter and changing states</p>	<p>Practical Skills</p> <p>Mathematical application</p> <p>Literacy</p> <p>Apparatus</p> <p>Scientific Techniques</p> <p>Science Capital</p>
9 Spring Chemistry	Quantitative chemistry	<p>Relative formula mass</p> <p>Conservation of mass</p> <p>Concentration</p>	<p>Practical Skills</p> <p>Mathematical application</p> <p>Literacy</p> <p>Apparatus</p> <p>Scientific Techniques</p>

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9 Summer Biology	Infection and response	Pathogens White blood cells Vaccines Antibiotic resistance Developing drugs	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
9 Summer Biology	Bioenergetics	Photosynthesis Limiting factors Respiration Exercise	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
9 Summer Physics	Electricity	Circuits Resistance $V=IR$ Series circuits Parallel circuits Electricity in the home Power and electricity National grid	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital

9 Summer Physics	Matter	Particle model of matter Density Internal energy changes Specific latent heat	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
9 Summer Chemistry	Chemical changes	Acids and bases Reactions of acids Reactivity series Extracting metals Electrolysis	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital
9 Summer Chemistry	Energy changes	Exothermic and endothermic reactions Measuring energy changes Reaction profiles	Practical Skills Mathematical application Literacy Apparatus Scientific Techniques Science Capital