

Curriculum Intent Year 9: **Foundations to Prepare youngsters for GCSEs and a Scientific career**

End Points for end of Year 9 science: Key knowledge – Skills – Character

Key Knowledge: Biology; Cells and Cell transport and Ecology. Chemistry: Atomic Structure and the periodic Table, The Atmosphere, Physics Energy stores, Energy Transfers and Energy Resources

Skills: Investigative Skills (Required Practicals) Method Writing. Maths Skills: Plotting Graphs

Character: Developing Independence And Resilience

Term	Module (number of lessons)	Essential Knowledge, Key words and skills learnt in this module (How this module contributes to the intent)	Links to Prior Learning	Links to future learning
Term 1	Biomimicry (13 lessons)	- Powers of 10 and orders of magnitude - Calculating magnification and microscope design - Energy changes with bio/chemiluminescence - Thermal energy transfers - Distillation and evaporation - Neurons - Photosynthesis experiments - Graphs and algebra	Y7 – Becoming a Scientist Y7 – Cells Y8 – Cells and Organisation Y8 –Forensics	Y9 – B1 Cell Structure Y10 – B10 The Structure and Function of the Nervous system Y10 – B8 Photosynthesis Y10 – C7 Energy Changes Y9 – C1 Atomic Structure Y9 – P2 Energy transfer by heating
Term 1	C1 Atomic Structure (9 lessons)	- Structure of the atom - Balancing equations - Separating techniques - The history of the atom - Ions and isotopes - Electronic structure	Y8 – Chemical Reactions	P7 – Radioactivity
Term 1	C2 Periodic Table (7 lessons)	- The history of the periodic table. - The group 1 and 7 elements - The transition metals - Trends in reactivity in the periodic table	Y8 – The periodic table	
Term 2	P1 Conservation	- Changes in energy stores and energy - Conservation of energy	Y7 – Energy	Y9 – P2 Energy Transfers Y9 – P3 Energy Stores

	and Dissipation of Energy (10 lessons)	- Energy and work - Gravitational and Elastic Potential energies - Kinetic energies - Energy dissipation and efficiency - Energy and power		Y11 - P5 Electricity in the Home
Term 2	B1 Cells and Cell Transport (15 lessons)	- Parts of an animal and plant cell - Analysing cells under a microscope - Specialised cells - Prokaryotic cells - Calculating Magnification - Diffusion - Osmosis - Active transport	Y7 - Cells Y7 - The Particle Model Y8 Cells and Organisation	Y10 - B5 Communicable Disease Y10 - B8 Photosynthesis Y10 - B9 Respiration
Term 2	B2 Cell Division (3 lessons)	- Cell division - Growth and differentiation of cells - Stem cells	Y7 - Cells	Y10 - B13 Reproduction
Term 2	P2 Energy Transfers (8 lessons)	- Energy transfers by conduction and infra-red. - Specific Heat Capacity experiment and calculation - Heating and insulating buildings	Y9 - P1 Y7 - Energy	Y9 - P3 Energy Stores
Term 2	P3 Energy Resources (5 lessons)	- Energy demands - Energy from wind, water, sun and Earth. - Energy and the environment.	Y8 - Energy	Y10 - P5 Electricity in Home
Term 3	B16 Adaptations and Competition (12 Lessons)	- Distribution of organisms in the environment. - Practical evaluation of the distribution of organisms. - Competition in animals and plants. - Adaptation of plants and animals	Y7 - Adaptations and Ecology	Y11- B17 Organising an ecosystem Y11 -B18 biodiversity and ecosystems

Term 3	C3. Structure and Bonding (14)	- States of Matter. - Ions and Ionic bonding. - Giant ionic structures - Covalent bonding - Simple molecular structures - Giant covalent structures - Fullerenes and graphene - Metallic bonding and structures - Nanoparticles and their applications (Separates)	Y9 – C1 Atomic Structure Y9 – C2 The Periodic Table Y9 – Biomimicry	BTEC Applied Science or A-Level in Chemistry Degree in Chemistry or Natural Sciences Materials Engineer
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