BRANNEL SCHOOL
EXCELLENCE | CREATIVITY | COMMUNITY

Curriculum Summary Document

Year 9 – Science

Strengthening Analysis, Evidence Use and Scientific Reasoning

Module/Unit of Learning	Taught During	What will students learn?	How does this prepare students for transition into Key Stage 4?	Links to other Subjects
Cell Biology	Autumn 1	Students deepen their understanding of cells as the fundamental unit of life. They use microscopes to observe different cell types, produce accurate scientific drawings and analyse how specialised cells support key biological functions. Students link cellular structure to the role of tissues, organs and organ systems.	Builds precision with biological vocabulary and microscopy—key skills for GCSE required practicals. Strengthens structured explanation and comparison, supporting future extended-response questions.	Oracy: explaining biological structures clearly
Organisation	Autumn 1	Students examine the organisation of the human body, including the circulatory and digestive systems. They analyse how organs work together and evaluate how lifestyle factors affect system efficiency.	Develops core physiology knowledge that underpins GCSE Biology. Strengthens sequencing and cause-and-effect reasoning.	PE: links to fitness and body function
Atomic Structure	Autumn 1–Autumn 2	Students learn atomic structure, including protons, neutrons, electrons and electron shells. They interpret atomic and mass numbers and use particle diagrams to represent atoms.	Provides the basis for chemical bonding, equations and reaction explanations at GCSE. Supports accurate use of symbols and models.	Maths: interpreting atomic number and simple calculations
Bonding	Autumn 2	Students compare ionic and covalent bonding and model the transfer or sharing of electrons. They link bonding type to melting point, conductivity and other material properties	Develops representational accuracy for GCSE questions requiring explanation of structure–property relationships.	Oracy: explaining models clearly
Energy	Autumn 2	Students learn about energy stores and transfers, including mechanical, electrical and heating processes. They calculate work done and efficiency and interpret simple energy graphs.	Strengthens multi-step quantitative reasoning required in GCSE Physics. Reinforces unit consistency and formula use.	Maths: substituting values into equations
Particle Model	Spring 1	Students apply particle theory to density, changes of state and internal energy. They interpret diagrams to explain changes in particle spacing and movement.	Develops abstract reasoning used extensively in both GCSE Chemistry and Physics.	Oracy: precise particle descriptions

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Radiation	Spring 1	Students study alpha, beta and gamma radiation, penetration properties and associated risks. They interpret radioactive decay graphs and evaluate safety information.	Practises data interpretation and evaluative writing required for GCSE "justify" and "evaluate" questions.	Maths: interpreting decay graphs
Infection & Response	Spring 2	Students examine how pathogens cause disease and how the immune system defends the body. They explore vaccination, antibiotics and disease prevention.	Builds secure foundations for GCSE immunology and strengthens sequencing of biological processes.	PSHE: health and disease prevention
Bioenergetics	Spring 2	Students study photosynthesis and respiration, comparing how energy is transferred in living systems. They analyse how variables affect biological rate processes.	Supports GCSE data-handling questions involving graphs, variables and experimental results.	Maths: interpreting rate graphs
Chemical Analysis	Summer 1	Students distinguish pure and impure substances and use separation techniques. They interpret chromatograms and justify conclusions from data.	Develops analytical reasoning and interpretation of practical results—core GCSE skills.	Geography: environmental impact of materials
Using Resources	Summer 1	Students explore material life cycles, recycling and sustainability. They evaluate environmental, social and economic impacts.	Prepares students for GCSE chemistry topics involving sustainability and evidence-based judgement.	Geography: sustainability and resource management
Atmosphere	Summer 2	Students examine the evolution of the atmosphere and the evidence behind climate change. They analyse data and evaluate reliability of scientific claims.	Strengthens evaluative writing and data interpretation for extended GCSE responses.	Geography: climate science
Ecology	Summer 2	Students analyse feeding relationships, population interactions and biodiversity. They evaluate human impacts and conservation strategies.	Supports synoptic thinking and multi-concept reasoning expected in GCSE Biology.	Geography: ecosystems and human impact