BRANNEL SCHOOL
EXCELLENCE | CREATIVITY | COMMUNITY

# Curriculum Summary Document

## Year 7 – Science

*Developing Scientific Thinking and Investigation Skills*

| Module/Unit of Learning | Taught During | What will students learn? | How does this help to build a broad and strong foundation? | Links to other Subjects |
|---|---|---|---|---|
| Introduction to science | Autumn 1 | Students learn laboratory safety, correct use of apparatus, and how to record data systematically.<br><br>They practise identifying variables, making predictions, and evaluating risks.<br><br>They begin to use scientific vocabulary accurately and structure observations clearly. | Builds core working scientifically skills: planning, measuring, recording, presenting, and evaluating evidence.<br><br>These habits underpin all KS3 and GCSE practical work and develop accuracy, precision, and reasoned explanation. | Oracy: developing precise spoken explanation<br><br>Maths: tables, measurements, and simple data presentation |
| Intro to Chemistry | Autumn 1 | Students learn the particle model and use it to explain states of matter and changes of state.<br><br>They represent particles diagrammatically and describe differences in particle arrangement, movement, and energy.<br><br>They apply ideas of diffusion and gas pressure to real contexts. | Establishes the conceptual foundation for chemical reactions, bonding, and energetics.<br><br>Supports progression to conservation of mass, formulae, and balanced equations at GCSE. | Oracy: explaining particle behaviour<br><br>Maths: reading scales and interpreting simple graphs |
| Chemistry in action | Autumn 1 | Students carry out observations of physical and chemical changes and identify evidence of chemical reactions.<br><br>They learn that reactions involve rearrangement of particles and that mass is conserved.<br><br>Students begin to represent reactions using word equations. | Reinforces evidence-based reasoning and accurate observation.<br><br>Introduces reaction language and representation, supporting later work on equations, reaction types, and stoichiometry at GCSE. | Oracy: describing observable changes |
| Human Body Part 1 | Autumn 2 | Students learn about organs and organ systems, focusing on circulation, respiration, and digestion.<br><br>They explain the hierarchical organisation from cells to systems.<br><br>They study gas exchange surfaces and lifestyle impacts on the body. | Builds secure core biological knowledge for KS4 physiology, including breathing mechanics, nutrient absorption, and blood transport.<br><br>Develops accurate anatomical and functional explanation. | Oracy: explaining biological processes clearly<br><br>PE: linking physiology to exercise and fitness |
| Energy | Autumn 2 | Students learn that energy is stored and transferred but conserved.<br><br>They represent energy transfers using diagrams and identify | Introduces the central concept of energy conservation, a unifying principle in KS3 and GCSE Physics. Supports later | Maths: proportional reasoning and unit conversion |

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| | | processes such as heating, electrical work, and movement.<br><br>They compare energy quantities and use units appropriately. | calculations involving power, efficiency, and energy changes. | |
| Health | Spring 1 | Students examine how lifestyle choices, diet, exercise, and microorganisms affect health.<br><br>They learn how the body defends itself and how diseases spread.<br><br>They consider the role of bacteria in digestion and the impact of drugs and alcohol. | Develops understanding of biological processes affecting wellbeing and disease, preparing students for cellular and immunological detail at GCSE. | PSHE: healthy choices and wellbeing |
| Forces | Spring 1 | Students learn that forces arise from interactions and can change an object's motion.<br><br>They draw force diagrams, compare balanced and unbalanced forces, and measure force in newtons.<br><br>They investigate stretching, friction, and air resistance. | Introduces Newtonian models used throughout KS3 and GCSE.<br><br>Develops quantitative reasoning about forces, motion, and energy transfer. | Maths: interpreting scale diagrams and proportional relationships |
| Periodic Table | Spring 2 | Students study the organisation of the periodic table into groups and periods.<br><br>They identify metals and non-metals and describe trends in reactivity and properties.<br><br>They begin to predict patterns based on group behaviour. | Establishes classification and periodicity concepts essential for GCSE chemical reactions, bonding, and properties.<br><br>Develops reasoning using trends and patterns. | Oracy: explaining trends and justifying predictions |
| Acids and Alkalis | Spring 2 | Students learn the pH scale, indicators, and neutralisation.<br><br>They conduct investigations to classify substances and observe reactions.<br><br>They represent neutralisation using word equations. | Forms the foundation for GCSE reaction equations, titration methods, and quantitative chemistry involving acids and bases. | Maths: reading measurement scales and recording results accurately |
| Life on our planet | Summer 1 | Students study ecosystems, food webs, and biodiversity.<br><br>They explain interdependence and how changes affect population size.<br><br>They evaluate human impacts on habitats and sustainability. | Builds understanding of ecological interactions and environmental change, supporting GCSE ecology and sustainability units. | Geography: understanding environmental change and resource use |

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| Space | Summer 1 | Students learn about the solar system, gravity, and astronomical scale.<br><br>They model day/night and seasons and describe orbits.<br><br>They use scientific models to explain observations and compare scales. | Develops system-model reasoning and conceptual understanding of gravitational interactions, preparing students for GCSE astronomy and physics topics. | Maths: working with scale, estimates, and large numbers |
| Enrichment project | Summer 2 | Students plan and conduct an independent inquiry, selecting methods, collecting data, and presenting conclusions.<br><br>They evaluate reliability and suggest improvements.<br><br>They communicate findings in written and spoken form. | Strengthens autonomy in scientific reasoning, evidence evaluation, and structured communication—core habits required for successful GCSE practical and extended responses. | Oracy: presenting structured scientific argument |