



Curriculum Overview

Curriculum Area: Science - Science Year: 9

Year 9 Science Transition Curriculum: This curriculum will change in September 2023 to reflect the adaptations in our KS3 Curriculum.

Autumn Term

Biology – (B1 Paper 1) Cell Biology: All pupils will learn the substantive core knowledge of cell structure, eukaryotes, prokaryotes, animal cells, plant cells, cell specialisation, cell differentiation, Microscopy, Cell division, chromosomes, mitosis and the cell cycle, stem cells, diffusion, osmosis, and active transport,

Chemistry – (C1 Paper 1) Atomic Structure: All pupils will learn the substantive core knowledge of atoms, elements, compounds, mixtures, the development of the model of the atoms, relative atomic mass, electronic structure, the development of the periodic table, metals and non-metals and group 0, 1 & 7.

Physics – (P1 Paper 1) Energy: Energy stores and systems, changes in energy, kinetic energy, elastic potential energy, gravitational potential energy, change in thermal energy, power, conservation of energy, efficiency, dissipation and national and global energy resources

Spring Term & Summer term

Biology – (B2 Paper 1) Organisation: All pupils will learn the substantive core knowledge of Principles of organisation, animal tissues, organs and organ systems, the human digestive system, the heart and blood vessels, blood, coronary heart disease, health issues, effect of lifestyle on non-communicable diseases, cancer, plant tissues and plant organ systems.

Chemistry – (C2 Paper 1) Bonding: All pupils will learn the substantive core knowledge of ionic bonding, covalent bonding, metallic bonding, , states of matter, state symbols, properties of ionic compounds, properties of small molecules, polymers, giant covalent structures, properties of metals and alloys, metals as conductors, diamond, graphite, graphene and fullerenes

Physics – (P2 Paper 1) Electricity: All pupils will learn the substantive core knowledge of circuit symbols, current, resistance, potential difference, resistors, series circuits, parallel circuits, mains electricity, power and national grid.

Links to National Curriculum

Our Year 9 Science curriculum for 2022-23 builds on the KS3 science curriculum covered over Year 7 and 8 in the context of the first two GCSE units of each subject.

In Biology the KS3 core knowledge of **Cells and organisation** is imbedded, built upon and developed with the cell biology and organisation units.

In Chemistry the KS3 core knowledge of The **Particulate nature of matter, Atoms elements and compounds, pure and impure substances and the periodic table** is imbedded, built upon and developed with the atomic structure and bonding topics.

In Physics the KS3 core knowledge of The **Calculation of fuel uses and costs in the domestic context, Energy changes and transfers, changes in systems, and Current electricity**, is imbedded, built upon and developed with the atomic structure and Bonding topics.

Our Science curriculum ensures that over the year and all three sciences all pupils will learn the fundamentals of each core disciplinary knowledge and skills for full coverage of **working scientifically**.

In the Year 9 science curriculum all pupils will learn the **experimental and investigation** skills and knowledge of carrying out an investigation, writing a plan and recording data and the **analysis and evaluation** skills of graph drawing, calculations, and evaluation.

Knowledge and understanding of this curriculum will be assessed by:

Embedded within the curriculum, a range of high-quality assessment techniques will be deployed at the point of learning to ensure that all pupils are acquiring the core substantive knowledge, identifying gaps, and addressing misconceptions.

Sequentially throughout the year pupils will be assessed on their retention of the core substantive knowledge using topic tests identifying gaps and misconceptions which will be addressed through a targeted intervention.

Pupils disciplinary core knowledge will be assessed systematically throughout the year, using a variety of bespoke practical scenarios to allow them to demonstrate fundamental core skills required within science and clear guidance of the next steps to progression in each area.

Powerful Knowledge/Cultural Capital Opportunities

The powerful knowledge of cells allows us to explain many of the functions of our own bodies and those of Biological systems. The powerful knowledge of pure and impure substances allows us to explain everyday processes such as filtration or distillation.

The powerful knowledge of electricity and magnetism will allow all pupils to build circuits and build switches, aware of the uses and dangers of mains electricity. The powerful knowledge of energy resources will enable all pupils to work out energy costs and the impact of issues such as renewability and climate change.