



Curriculum Intent Science

The aim of Science is to inspire and enthuse our students, to develop inquisitive minds that question the world around them, come up with new ideas and discover new evidence that shapes our understanding of the world in which we live.

Science (from the Latin word *scientia*, meaning "knowledge") is a systematic enterprise that builds and organises knowledge in the form of testable explanations and predictions about the universe. The science curriculum has been designed to provide students with a deep understanding of the scientific knowledge and ideas that impact them as individuals. As they move through the curriculum, students will be increasingly supported in developing their curiosity, provided with insight into working scientifically and develop an appreciation of the value of science in their everyday lives.

Principles

Entitlement: All students study all areas of Science with content covered by the National Curriculum enhanced and added to but never removed. Knowledge and skills are the same for all students but personalised to meet the variety of needs of each class which ensures all students can access the curriculum and succeed in Science.

Coherence: The sequencing of topics is deliberately chosen to begin with basic ideas and build up to more complex ones across the key stages. For example:

- ***In Year 7 Chemistry:*** Students begin by learning the particle theory of all materials – solids, liquids and gases. They will then look at how particles behave in different states, and how chemical reactions take place between particles. Particles is the first topic studied in year 7 as it is also a prerequisite for diffusion which is taught in Cells.
- ***In Year 7 Biology:*** Students begin by learning about the basis of all living things – cells. They look at plant and animal cells and then go on to learn about how multicellular organisms are structured as cells group together to form tissues, organs and organ systems. Some examples of systems are learned about – the digestive, reproductive and breathing systems.
- ***In Year 7 Physics:*** Students learn about key energy stores and how energy can be transferred between stores in order to make it useful to us – as well as where energy is lost to the environment. They then go on to learn about how forces interact and impact objects, both stationary and moving.

Mastery: Scientific concepts are taught in KS3 and again in KS4 to embed knowledge and skills. Interleaving content is used in class and homework to ensure a deeper understanding of key vertical strands. Prior learning is made explicit on Schemes of learning and the use of



frequent and varied formative assessment including but not limited to Retrieval Practice, fluency and homework is used to inform future learning. Formative assessment is used to rigorously ensure that misconceptions are identified, addressed and replaced with correct scientific ideas.

Adaptability: The curriculum is scaffolded to enable all students of all abilities to access the full range of topics and skills that are taught throughout the curriculum. Learning is tailored to the needs of students within each class. Specific adaptations are written into the schemes of work as a starting point for all students.

Representations: All students see themselves in our curriculum. A diverse range of names, images and scientists are used in resources through the curriculum so that students of all backgrounds and identities recognise their relevance of science and the curriculum is representative of a wide range of countries and cultures. We also make links to our current location including the discoveries of the atom in Manchester, the Moss land habitat in the local vicinity and also the local Waterworks. We use this contextualised approach to inspire a love for Science within our students linking it to their everyday location.

Education with Character: Our curriculum is intended to spark curiosity and to nourish both the head and the heart. The science curriculum raises several ethical, culturally significant, or sensitive questions which students will want to explore in ways that go beyond the curriculum such as Stem Cells (B1), Using Resources (C10) and Fertility Treatments (B5). As part of our curriculum we aim to highlight the many rich careers that can be accessed through studying Science, using lessons as the starting point for making links between what is being taught and future careers. Additionally, we provide a variety of enrichment opportunities, including outside speakers, workshops, trips, Aspire programme STEAM and various extracurricular opportunities.