Subject: Science

Science Lead: Pam Sutliff

Exam Board: AQA

Qualification type: GCSE

Intent

Principles of the Science Curriculum

The United Curriculum for Science is built upon the core United Curriculum principles available **here**.

Our science curriculum is sequenced so that students build an increasingly deep knowledge within scientific themes. New content is introduced in small steps, and students are supported to develop their understanding by connecting this new content with their prior knowledge. Knowledge is revisited over the years to restimulate memory in new contexts. Where appropriate, meaningful links are made with other subjects, particularly geography and mathematics.

Our curriculum links learning to real-life contexts and highlights the relevance of science to everyday situations. Curiosity is nurtured through a practical approach and students develop confidence in the skills and security in the knowledge needed to achieve the highest aspirations.

The rationale behind the sequencing of lessons:

The three science disciplines are timetabled separately in year 10 and sequencing within each subject builds on previously learned fundamental concepts. Do now tasks are used to check recall and understanding of previously taught topics that are then developed within the lesson. eg. Students need to understand about atomic structure before they can comprehend ionic and covalent bonding and reactivity. The topic of bioenergetics builds on the basics of photosynthesis taught at KS3. Homework is used to consolidate learning and practise skills required eg. numeracy and extended writing.

Implementation

In Key Stage 4 the Science curriculum is implemented as follows:

Year 10

The year 10 curriculum builds on the National Curriculum for KS3 and covers the KS4 GCSE contents. Students study the three science disciplines of biology, chemistry and physics through different routes - GCSE Combined Science (Trilogy) equivalent to two GCSEs or GCSE Biology, GCSE Chemistry and GCSE Physics. Students learn through direct instruction, modelling, practical work and independent research. Required practicals are an important part of the exam assessment and allow students to learn through hands on exploration

while developing working scientifically skills including planning, recording data, graph skills, analysis and evaluation. Homework is integral to our curriculum and provides a structured opportunity for students to consolidate their learning through the use of online tools eg. Seneca and past paper questions.

Year 11

The year 11 curriculum completes the National Curriculum for KS4 and the GCSE content. Students study the three science disciplines of biology, chemistry and physics through different routes - GCSE Combined Science (Trilogy) equivalent to two GCSEs or GCSE Biology, GCSE Chemistry and GCSE Physics. Students learn through direct instruction, modelling, practical work and independent research. Required practicals are an important part of the exam assessment and allow students to learn through hands on exploration while developing working scientifically skills including planning, recording data, graph skills, analysis and evaluation. Homework is integral to our curriculum and provides a structured opportunity for students to consolidate their learning through the use of online tools eg. Seneca and past paper questions.

Impact

The careful sequencing of the curriculum – and how concepts are gradually built over time – is the progression model. If pupils keep up with the curriculum, they are making progress. Formative assessment is prioritised and is focused on whether pupils are keeping up with the curriculum.

In general, this is done through:

- Questioning in lessons. Teachers check understanding so they can fill gaps and address misconceptions as required.
- Pupil conferencing with books. Subject leads and SLT talk to pupils about what they have learnt – both substantive and disciplinary knowledge – and how this connects to the vertical concepts that they have been developing in previous years and other subjects.
- Post-learning quizzes at the end of each unit. These give teachers an understanding of the knowledge that pupils can recall at the end of the unit and can be used to identify any remaining gaps to be filled.
- Pre-learning quizzes at the start of each unit. These assess pupils' understanding of the prior knowledge that is required to access the new content in the unit. These are used to identify gaps to be filled prior to teaching the new unit.