SCIENCE

How do we identify the starting points of our students?

- Starting points are identified using KS2/ KS3 induction data.
- Regular assessments and marking highlight gaps.
- Using observations and questioning techniques.

What skills should students develop across the sciences? Students develop:

- Scientific knowledge and conceptual understanding across biology, chemistry, and physics disciplines.
- Understanding of scientific nature, processes, and methodologies through diverse scientific inquiries aimed at answering questions about the world.
- Observational, practical, modelling, inquiry, and problem-solving skills cultivated in laboratory, field, and other educational settings.
- Ability to critically evaluate scientific claims by analysing methodology, evidence, and conclusions qualitatively and quantitatively.
- Curiosity about the natural world, insight into scientific processes, and awareness of science's relevance to daily life.

How do we assess and track progress?

- Utilising AFL to include formative assessments, self-assessments and diagnostic assessments.
- Fortnightly and formative marking, informal verbal assessment.
- Utilising targets and termly RAF meetings
- Ability to work safely and scientifically

How do we develop knowledge of the scientific process?

- Use of disciplinary knowledge together with substantive.
- knowledge to ask and answer scientific questions.
- Performing different types of scientific enquiry.
- Recognise the power and limitations of science.
- Consider associated personal, social, economic and environmental implications.
- Modelling- using models to illustrate scientific concepts and processes e.g. physical models, simulations, or diagrams.

What key threads flow through our curriculum?

- Development of scientific thinking.
- Experimental skills and strategies.
- Analysis and evaluation.
- Vocabulary, units, symbols and nomenclature.

How we uncover and respond to gaps in knowledge?

- We utilise AFL to include direct observation, questioning, feedback, self, peer assessment, formative, and summative assessment to identify individual gaps to highlight and address individual gaps and to inform teaching and learning.
- Students are routinely monitored and evaluated to ensure that objectives for key stages are met.
- Differentiated support in classrooms and tutor team support.

How do we adapt our content to help our students know more?

- Real-life application and incorporate practical skills.
- Utilising task breakdown sheets.
- Consistently linking previous knowledge and revisiting key concepts.
- Using assessment as learning
- Addressing misconceptions
- Different strategies employed to provide individual students with support identified from their IEPs.

How do we promote reading?

- Scientific vocabulary taught in each lesson
- Implement reading activities eg evaluating an argument and scenario's
- Encourage independent reading of scientific materials
- Reading exam questions

How do we deepen knowledge?

- Utilise real-life situations .
- Link new concepts with previous knowledge.
- Assessment for learning.
- Assessment as learning and assessment of learning
- Engage students in enquiry-based learning.
- Interplay between substantive and disciplinary knowledge.
- Apply knowledge to unfamiliar context.
- Practice.
- Practical procedures

What we do to make sure students retain knowledge during this sequence?

- Utilise retrieval activities to include starters for long-term memory purposes.
- Feedback and reflection.
- Utilising our teaching and learning model.
  - Acquire phase- new information introduced to students.
  - Construct Phase- Pupils use what they have learned to construct models.
  - Apply phase –Pupils demonstrate and apply learning to tasks.