Science Department

Mr M Dobbyn (MDO) Curriculum Leader of Science

Mrs C Garry (CGA) Assistant Curriculum Leader of Science (KS3)

Mr W Tabernor (WTA) Head of Physics

Mrs Z Bailey (ZBA) Head of Chemistry

Mrs A Edwards (AED) Deputy Head (Quality of Education)

Mr R Ashton (RAS) Teacher of Science (Chemistry)

Mrs N Heelam (NHE) Teacher of Science (Physics)

Mrs A Wrigley Senior Technician

Ms S Smyth Technician

Curriculum Intent

- 'Ambition for all': a science education forms an important entitlement for all young people. All students should, therefore, be encouraged to develop a sense of excitement and curiosity about natural phenomena and the motivation to succeed within science.
- Building on prior knowledge and allowing students to follow an overarching narrative as they develop their knowledge and understanding of the subject through both Key Stages.
- Providing students with opportunities to plan, monitor and evaluate their own learning through the effective use of self-assessment, peer-assessment and independent study at home.
- Use of carefully selected models to allow students to develop a deeper understanding of scientific concepts and an ability to evaluate the models themselves.
- Helping students to retain and retrieve knowledge by regularly revisiting previous learning.
- Carefully sequenced practical work to help students to develop their scientific reasoning and enquiry skills.
- Provision of opportunities for students to develop into educated, tolerant, respectful citizens such as debating the ethics of science, studying the impact of science on society, attending extra-curricular clubs and taking part in enrichment activities.
- Explicit teaching of the language of science within lessons, including the tier 2 words which students will need to understand to be successful within science.
- The use of strategic, well-timed feedback to determine what pupils understand, address misconceptions and help students to strengthen mental models.
- Provision of a foundation for students to move into a range of diverse and valuable science careers.

Key Stage 3 Curriculum:

Year 7 topics:

- Science 'driving licence'
- Cell organisation
- The particle model
- Energy
- Sexual reproduction in humans
- Mixtures and separation
- Full investigation
- Acids and alkalis
- Forces
- Ecosystems

Year 8 topics:

- Atoms, elements and molecules
- Nutrition and respiration
- Current electricity
- Classification and cycles in nature
- Sound
- Light
- NHS careers project and competition
- More forces
- Plants

Year 9 topics:

- Atoms, elements and chemical reactions
- Electricity, magnetism and energy transfer
- Genes and inheritance
- KS3 progress check
- Metals reactions
- Materials from rocks
- Full investigation

KS4 Science Curriculum

Pearson Edexcel

We offer three different GCSE pathways during Years 10 and 11**,** enabling us to provide every student with an option which is appropriate to their ability and aspirations. Most students will study towards 2 Combined Science GCSEs. GCSE students follow the Edexcel GCSE Combined Science specification.

Topics covered:

- Key concepts in biology
- Cells and Control
- Genetics
- Natural selection and genetic modification
- Health, disease and the development of medicines
- Plant structures and their functions
- Animal coordination, control and homeostasis
- Exchange and transport in animals
- Ecosystems and material cycles
- Key concepts in chemistry
- States of matter and mixtures
- Chemical change
- Extracting metals and equilibria
- Groups in the periodic table
- Rates of reaction and energy changes
- Fuels and Earth science
- Key concepts of physics
- Motion and forces
- Conservation of energy
- Waves
- Light and the electromagnetic spectrum
- Radioactivity
- Energy- forces doing work
- Forces and their effects
- Electricity and circuits
- Magnetism and the motor effect
- Electromagnetic induction
- Particle model
- Forces and matter

Students are also given the opportunity to study separate Science GCSEs as an option pathway. They can work towards separate Biology, Physics and Chemistry GCSE qualifications. Each provides an opportunity for further developing an understanding of science explanations, how science works and the study of elements of applied science, with particular relevance to professional scientists.

Additional topics covered:

- Astronomy
- Static electricity
- Hydrocarbons
- Qualitative Analysis

Foundation level learners are also provided with the opportunity to achieve an Entry Level Certificate in Science and Further Science. They are co-taught this content alongside the GCSE content, so they still retain the potential to be entered for GCSE Combined Science and achieve a grade if this is judged to be appropriate for them.

Entry level topics:

- Cells, genetics, inheritance and modification
- Health, disease and the development of medicines
- Plants and ecosystems
- Human biology
- Atoms, compounds and states of matter
- Separating mixtures
- Acids and metals
- Elements and chemical reactions
- Fuels and the Earth's atmosphere
- Forces, movement and energy
- Waves and radiation
- Electricity and magnets
- Energy and particles