

Science Curriculum: Year 11

Science provides a key foundation for students to understand the world around us. Science effects our daily lives, stimulates curiosity and broadens student's horizons, both in the understanding of wider scientific issues and providing access to a range of job opportunities. The science curriculum provides students with the opportunity to develop a love and appreciation of science and realise their full potential through the breadth and depth of scientific knowledge and skills. Students are naturally curious, by stimulating this curiosity, through scientific ideas, practical investigation and the studying the wider implications of science, we can ensure they are motivated to reach their full potential.

KS4 continues the process of deepening scientific knowledge and understanding. Students study all three science disciplines throughout the year as shown below:

	Autumn term	Spring	Summer
Biology	B6 Inheritance, variation and evolution Students study the role of DNA and chromosomes in the inheritance of characteristics, learn to predict inheritance using genetic diagrams and how this influences natural selection and artificial selection.	B5 Homeostasis This unit focus on how the body maintains the conditions needed for life through both the nervous and endocrine systems.	Review and exam preparation Classwork develops key exam techniques and incorporates of the review of key concepts and knowledge in preparation for the summer exam series.
	Important vocabulary: Inheritance, dominant, recessive, evolution, variation, mutation, speciation, genetic	Important vocabulary Nervous, endocrine, negative feedback, fertility, sensor, receptor, effector, stimulus.	Important vocabulary: Explain, Evaluate, compare, contrast, justify
Chemistry	C6 Rates of Reaction Students investigate the factors that can affect the rate of reaction and explain these in terms of collision theory. This knowledge is then applied to reversible reactions and equilibrium. C8 Chemical analysis Looking at specific chemical qualitative tests to identify the presence of individual chemicals.	C7 Organic Chemistry Study of crude oil, its separation through distillation and breakdown into useful chemicals in cracking C10 Using resources.	Review and exam preparation Classwork develops key exam techniques and incorporates of the review of key concepts and knowledge in preparation for the summer exam series.
	Important vocabulary: Analysis, qualitative, atmosphere, pollutant, distillation, cracking, hydrocarbon	Important vocabulary: Equilibrium, reversible, yield, collision, rate	Important vocabulary: Explain, Evaluate, compare, contrast, justify
Physics	P5 Forces The unit starts by looking at contact and non-contact forces and the calculation of resultant forces. Students then investigate forces and elasticity before moving on to looking at forces and motion.	P6 Waves The unit investigates the nature and behaviour of waves, including the electromagnetic spectrum. P7 Magnetism and electromagnetism Developing Ks3 ideas about permanent and induced magnets students apply this to the motor effect and how motors work.	Review and exam preparation Classwork develops key exam techniques and incorporates of the review of key concepts and knowledge in preparation for the summer exam series
	Important vocabulary: Vector, scalar, displacement, tangent, resultant, inertia, momentum	Important vocabulary: Induced, magnetic flux, field, electromagnetism, attraction, repulsion.	Important vocabulary: Explain, Evaluate, compare, contrast, justify

These topics will also help students to understand:

- the use of conceptual models and theories to make sense of the observed diversity of natural phenomena
- the assumption that every effect has one or more cause
- that change is driven by interactions between different objects and systems
- that many such interactions occur over a distance and over time
- that science progresses through a cycle of hypothesis, practical experimentation, observation, theory development and review
- that quantitative analysis is a central element both of many theories and of scientific methods of inquiry.

Key staff contacts:

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How parents can help:

- Review key vocabulary with your child to help them transfer it to their long-term memory.
- Ask students to explain what they have learnt that week, this also helps build long-term memory.
- Try watching science / nature programs together and talking about them to encourage them to investigate the world around them.
- Help them explore science YouTube channels (like Sci show or Minute Physics), to give them a broader knowledge of science in the real world.
- Research some simple experiments they can do at home.

How your child will be assessed:

Assessment of learning takes many forms. Much of this will be informal assessment in lessons through verbal and written responses to questions. Students will have regular opportunity to assess their own progress through the regular quiz reviews.

In Science, we understand that to make progress students need to know and practice the next steps to improve their work. For this reason in each topic, staff assess an identified assessment task. Students will receive feedback that includes some improvement or next steps to complete. This may take a number of forms from short answer correction, answering additional, extension questions, or redrafting sections of longer written work either for correct scientific content or for improving the quality of written English.

To monitor the progress in students' knowledge and skills they will also sit a short assessment for each topic, with time to mark their work and correct mistakes. This provides an important opportunity for students to reflect on their learning and any additional steps to take.

Each term also includes 1 longer formal assessment that covers the previous 3 units, to give a clear assessment of learning over time. It is this assessment, along with the ongoing formative assessment that form the basis of the reports each term.

Developing an understanding of the scientific process is an intrinsic part of learning about science. In addition to carry out practical work in lessons where appropriate students understanding of this process will be assessed along with key knowledge in the topic assessment tasks, short unit assessments and the longer formal assessments in line with how these skills are assessed in standard national assessments.

Please feel free to contact us to discuss our assessment policy in depth.