



Physics

Curriculum Intent

Key Stage 4

We aim to build on the solid foundation of knowledge and skills developed at Key Stage 3, while the complexity of practical skills, mathematical techniques and concepts increase.

GCSE Physics now starts at the beginning of Year 9 & we begin with fundamental concepts of Energy & Power, before moving onto Electrical Circuits, Thermal energy transfers, Magnetism and Forces, finishing with Space, which tends to fascinate a range of students so builds their interest and enthusiasm.

During year 10, we begin with another module of Forces. The ideas within Forces and Energy are revisited throughout the course and also gives an excellent opportunity to introduce the mathematical nature of Physics. The Current Electricity topic comes next, building on Circuits from year 9 and covers some of the more abstract concepts, such as potential difference and static. We continue with some more Energy calculations, and then Particles and their behaviour and Waves, before revisiting each topic area at least once more in order to introduce and develop the more complex and demanding ideas. This trend of raising complexity continues, with Nuclear Physics, more Space and Electromagnetism near the end of the course.

Key Stage 5

The A level journey starts with Foundations of Physics as we have found students make better progress when actually taught this as a standalone topic, whilst continuing to develop the skills throughout the course. Running in parallel, students study Electricity, as these ideas continue seamlessly from GCSE and is one of the less mathematically challenging topics. Waves and Forces and Motion follow, with the abstract Quantum Physics being taught towards the end of Year 12. Particle Physics and Thermal Physics then start the Year 13 section of the course.

Year 13 continues with Ideal Gases, Gravitational and Electric fields, Fields, Capacitors, Radioactivity and Electromagnetism taught at the end of the course. PAGs provide the opportunity to show progression of practical skills, introduced in the Foundations module and consolidated during lessons. Experimental and analysis skills are assessed within the final exams.

Curriculum Implementation

Key Stage 3

Year 9

Key Stage 4: GCSE (AQA)

- Energy & Power
- Electrical Circuits
- Magnets and Electromagnets
- Thermal energy and resources
- Intro to Forces
- Space

Year 10

- Forces¹
- Current Electricity
- Energy 2
- Particle model of Matter
- Forces 2
- Waves
- Motion

Year 11

- Force, Motion and Momentum
- Radioactivity
- Mains electricity
- Electromagnetic Spectrum
- Space 2
- Electromagnetism

Key Stage 5: A Level (OCR A)

Year 12

- Foundations of Physics
- Electricity
- Forces and Motion
- Materials
- Waves
- Quantum Physics
- Particle Physics
- Thermal Physics

Year 13

- More Thermal Physics
- Ideal Gases
- Oscillations
- Gravitational Fields
- Astrophysics & Cosmology
- Capacitors and Electric Fields
- Nuclear Physics
- Electromagnetism
- Medical Physics

Impact

Key Stage 4

By the end of year 11, students have:

- Studied all the topics included in the specification
- Gained confidence and competence in manipulating equations, converting to SI units, including units in their answer
- Gained an understanding of the concepts, often abstract, covered in Physics
- Be competent in using a range of apparatus, including data loggers to investigate relationships and gather data
- Gained knowledge of how Physics is useful in the outside world, including an awareness of careers where a knowledge of Physics is useful.
- Gain skills for answering exam style questions, to include carefully reading the question, extracting the important parts, carrying out a calculation and considering the answer is reasonable, or giving an explanation in sufficient detail for the marks available,
- Have sufficient knowledge to make an informed decision about continuing the subject to A Level

We will monitor progress of all students, in particular to ensure PP and SEND students meet expectations and have additional support as necessary. All lessons will include a selection of several from the following:

- Experiment
- Group work
- Discussion
- Screen presentation shared electronically
- Work in the booklets, with the booklets shared electronically
- Demonstration

This is to make understanding the concepts accessible to all students, whatever their preferred learning style.

Key Stage 5

- Studied all the topics included in the specification
- Gained confidence and competence in manipulating the more complex equations in A Level
- Gained a deep understanding of the concepts, often abstract, covered in Physics
- Be competent in using a wide range of apparatus, including data loggers to investigate relationships and gather data. Also using IT to process and present the data
- Gain skills for answering exam style questions, to include carefully reading the question, extracting the important parts, carrying out a calculation and considering the answer is reasonable, or giving an explanation in sufficient detail for the marks available,
- Gain the skills to work and study independently and as part of a team

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