

Curriculum Intent

Physics involves the study of matter, its motion and behaviour through space and time, and studies of forces and energy. The main goal of Physics is to understand how the universe behaves. The study of physical concepts over time has led, sometimes inadvertently, to the development of many technologies that have transformed modern-day society. We aim for all students to:

- be curious and interested in Physics
- to know how to use specialist Physics vocabulary
- to apply their knowledge to develop their scientific practical skills
- to extend students' preconceptions of Physics and progress their understanding
- appreciate that the behaviour of the universe can be described mathematically
- embed core concepts so that they can access and apply the key skills needed to enjoy and succeed in Physics

Autumn Term | Forces

Students will learn:-

- ✓ Friction and drag
- ✓ Squashing and stretching
- ✓ Turning forces
- ✓ Pressure in gases
- ✓ Pressure in liquids
- ✓ Stress on solids

What does excellence look like?

- Plan and carry out an experiment to measure friction, stating the independent, dependent, and control variables.
- Present Hooke's law measured data in a graph and recognise quantitative patterns and errors.
- Apply the concept of moments to everyday situations.
- Calculate fluid pressure in a range of situations.
- Explain why liquid pressure changes with depth.
- Calculate stress in multistep problems.

How will we assess impact?

- Peer and self-assessment
- Previous lesson recap quiz
- Land mark tasks
- End of topic test

Knowledge, understanding & Skills

- Carry out an experiment to test a prediction of friction caused by different surfaces.
- Use Hooke's Law to identify proportional stretching.
- State the equation to calculate a turning force.
- Describe the motion of particles in a fluid
- Describe characteristics of some objects that float and some that sink.
- State the equation of stress.

How is homework used to enhance learning?

Kerboodle <https://www.kerboodle.com/app>
 BBC bitesize <https://www.bbc.co.uk/bitesize/subjects/zh2xsbk>
 AES student science website
<https://sites.google.com/view/angloscience>

Suggested homework tasks

- Learn spelling and definitions of key words.
- Observe and record times taken and distances travelled for a variety of journeys.
- Write a holiday brochure for a trip to another planet explaining conditions and how to prepare.
- Produce a car safety leaflet using Physics to explain why car drivers should slow down.



Spring Term | Electromagnets

Students will learn:-
Magnets and magnetic fields
Electromagnets
Using electromagnets

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Suggested homework tasks

Learn spelling and definitions of key words.
Prepare a list of pieces of electrical equipment used at home and the potential difference supplied, either from batteries or the mains (230 V).

How will we assess impact? (3D)

Peer and self-assessment
Previous lesson recap quiz
Land mark tasks
End of topic test

Knowledge, understanding & Skills

- Draw the magnetic field lines around a bar magnet.
- Describe how magnets interact.
- Construct an electromagnet and test the factors that affect its strength.
- State some uses of electromagnets.
- State the main parts of an electric bell, circuit breaker, or loudspeaker.

What does excellence look like?

- Explain how a compass works.
- Suggest improvements to an experiment to observe field lines around a magnet.
- Predict the effect of changes on the strength of different electromagnets.
- Suggest how two wires both carrying currents placed next to each other might behave.
- Suggest investigations about electromagnets used in different applications.

Summer Term | Waves

Students will learn:-
Sound waves, water waves and energy
Radiation and energy
Modelling waves

Knowledge, understanding & Skills

- Describe the link between amplitude or frequency and energy.
- Define frequency and amplitude.
- Name some waves of the electromagnetic spectrum.
- Name an electromagnetic wave that can be harmful to living cells.
- Compare transverse and longitudinal waves.
- Describe how to use a wave model to explain observations of the reflection, absorption, and transmission of waves.

How will we assess impact? (3D)

Peer and self-assessment
Previous lesson recap quiz
Land mark tasks
End of topic test

How is homework used to enhance learning?

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Suggested homework tasks

- Learn spelling and definitions of key words.
- Research supersonic travel.
- Plan an investigation to see how far different types of seeds can be dispersed
- Identify and write about items that use lenses (or refraction) at home.
- Write a guide telling police how to collect accurate witness statements for crimes committed in yellow street light.

What does excellence look like?

Explain, in terms of frequency, why we use ultrasound for cleaning and physiotherapy.

Evaluate locations for the use of waves to generate electricity.

Describe all the waves of the electromagnetic spectrum in terms of increasing wavelength or increasing frequency.

Explain why ionisation can be harmful to living cells

Evaluate different models of waves.

Explain why you can add sound waves and light waves and get less than you started with.

International Opportunities

Visits Programmes

La Coupole -Planetarium – Solar system
La Coupole Bunker – secret Nazi V2 launch site
(Wernher von Braun – Nazi scientist and space travel)

Within the curriculum

The KS3 Physics curriculum is designed to introduce students to the key scientific concepts, supported through the study of international examples and theories.

Students are encouraged to engage with scientific concepts and theories beyond the syllabus by exploring key examples of international collaboration, or scientific discovery where the common language of scientific discovery is utilised. Reference is additionally made to key scientists with connections to countries and cities visited as part of the school's international exchange programme.