

A LEVEL PHYSICS

If you want to know “Why?”, it’s often a good idea to ask a physicist. Physics explains why the world, and indeed our universe, behaves the way it does and works in the way we observe. It studies matter from the smallest sub-atomic particles to the vast expanse of stars and galaxies, and attempts to describe them and, most importantly, to predict the outcome of events in space and time. Physics, being the central science, is the study of nature at its most fundamental level.

As such, it is not surprising that physics is often combined with other subjects such as Biology (in biophysics) or medical physics in separate disciplines that students could potentially study in university. Studying Physics will open many doors, as employers in diverse fields will hire physicists for their mathematical, modelling, and critical thinking skills.

In this course, you will expand upon your GCSE physics knowledge of Newton’s Laws, electromagnetism and energy, where many experiments will be done to aid your understanding of these and subsequent topics (circuitry experiments included). You will also be introduced to a basic knowledge of the fundamentals behind materials science, and will often be asked to make cross subject connections. You will also study waves, particle physics and quantum behaviour, imaging, signalling, and other exciting topics! Einstein’s theory of relativity will also be a focus area.

COURSE OUTLINE

In year one you will study measurements and their errors, particles and radiation, waves, mechanics, materials and electricity. In year two you will study further mechanics and thermal physics, fields and their consequences and nuclear physics.



Throughout both years of A level Physics you will also undertake a variety of practical experiments which aim not only to demonstrate the theory you learn in practice but also to hone your skills as a scientist: to observe physical effects, to measure them systematically and accurately, to draw conclusions, and to make predictions. Typical experiments include: measuring the speed of waves on a string, investigating magnetic forces in wires; and measuring the gravitational strength of the entire planet.

ASSESSMENT STRUCTURE

You will sit all of your A Level examinations at the end of the course. Examinations are two hours each, are 100% written and contain a mixture of multiple choice, long as well as short answers.

YEAR	TITLE	CONTENT	WEIGHTING
End of Year 13	Paper 1	Periodic Motion	35%
End of Year 13	Paper 2	Thermal Physics	35%
End of Year 13	Paper 3	All content, practical skills & data analysis	30%

ENRTY REQUIREMENTS

Competition for places will be high as the sciences are a popular choice at A Level as well as university. As a result to ensure we strive for the highest success students will ideally have Grade Point 7-9 (Grade A*/A) in science or Physics GCSE. The minimum GCSE grade required is Grade point 6 (Grade B). Some of the content overlaps with biology, chemistry and mathematics curricula. Studying these subjects alongside physics would be advantageous.



Look deep into nature, and then you will understand everything better - Albert Einstein



PROGRESSION ROUTES

Physics is not a purely academic endeavour, it lies at the heart of many (if not all) technological and engineering innovations: from aeronautics to architecture, from computing to cooking. As such, progression routes following a strong performance at A Level in Physics are very promising.

Related degree courses with this qualification include mathematics, computer science, medicine, engineering and the sciences. Careers include medicine, veterinary sciences, dentistry, physiotherapy, optometry, biological and biomedical sciences, forensic sciences and marine biology. The ground-breaking research of Marie Curie into radioactivity paved the way for the development of much of modern medicine; the GPS navigation that tells Google Maps where you are relies on the genius of Albert Einstein. It is these far-reaching implications from the deep physical principles that govern our universe, that is the reason Physics attracts the interest and passion of curious minds all over the world.

RECOMMENDED EXTRA CURRICULAR ACTIVITIES

In addition to numerous clubs and societies taking place every week in Science, we also offer:

British Physics Olympiad

Students in Y13 will have the opportunity to take part in the British Physics Olympiad (BPhO), a competition held at the University of Leicester each year.

Smallpiece Trust

Students in Y12 and 13 will be encouraged to apply for engineering residential courses held throughout the year in many leading universities.

Young Engineers Competitions

Students will be encouraged to take part in a number of competitions available by the Young Engineers organisation.

Nuffield Research Placements

You will have the chance to work alongside professional scientists on a research project for four weeks during the summer holidays.

RECOMMENDED READING LIST

We Need to Talk about Kelvin
by Marcus Chown

Big Bang by Simon Singh

The Wave Watchers Companion
by Gavin Pretor-Pinne

TOP 5 UNIVERSITIES CURRENTLY FOR THIS SUBJECT

1. Cambridge
2. Oxford
3. Imperial College London
4. Durham
5. Bath

COURSE/QUALIFICATION DETAILS

Qualification: A Level Physics

Board: AQA

Code: 7408

Mr Barker, Lead Practitioner for Science

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