Carshalton Boys A level

Physics

The aim of the A Level Physics course is to enable students to develop their interest in and enthusiasm for Physics, including progressing to higher education and longer term careers using the subject.

Students will learn to appreciate how society makes decisions about science related issues and how Physics contributes to the success of the economy, industry and society. They will also develop and demonstrate a deeper appreciation of the skills, knowledge and understanding of different areas of Physics and how these areas relate to each other.

Students should aim to develop a holistic view of Biology, Physics and Chemistry as separate subjects, but also science as a whole discipline through thorough study of the units involved. This qualification can be used to pursue a career in Medicine, Research, Engineering, Teaching, Forensics, Sport, Aerodynamics and so on. Physics combines well with other Sciences, Psychology, Mathematics, Mechanics and Product Design.

ASSESSMENT and CONTENT

At AS Level there are two taught components, each accounting for 50% of the AS grade, these are examined at the end of the year in two 70-mark examinations. Both papers will assess practical skills with at least 10% of the paper also assessing KS5 mathematical skills.

Component 1: Breadth in Physics (1hr 30 mins)
Component 2: Depth in Physics (1hr 30 mins)

At A Level there are three components. Each will assess practical skills and mathematical skills along with the content highlighted below:

Component 1: Modelling Physics (2hrs 15 mins) - 37%
Component 2: Exploring Physics (2hrs 15 mins) - 37%
Component 3: Unified Physics (1hr 30 mins) - 26%

Module 1: Practical activities are embedded within the learning outcomes which contribute to the achievement of the Practical Endorsement as well as enhancing learners' understanding of physics theory and practical skills.
Module 2: The aim of this module is to introduce important conventions and ideas that permeate the fabric of physics.
Module 3: Learners will learn how to model the motion of objects using mathematics, understand the effect forces have on objects, learn about the important connection between force and energy, appreciate how forces cause deformation and understand the importance of Newton's laws of motion.
Module 4: In this module, you will learn about electrons, electric current, electrical circuits, wave properties, electromagnetic waves and of course, quantum physics. You will have the opportunity to appreciate how scientific ideas of quantum physics developed over time and their validity rested on the foundations of experimental work.
Module 5: The aim of this module is to show the impact Newtonian mechanics have on physics. The microscopic motion of atoms can be modelled using Newton's laws and hence provide us with an understanding of macroscopic quantities, such as pressure and temperature. Newton's law of gravitation can be used to predict the motion of planets and distant galaxies.
Module 6: You will learn about capacitors, electric field, electromagnetism, nuclear physics, particle physics and medical imaging. Also, you will discuss how science has benefited society with important devices such as generators and transformers and nuclear power stations. The last section shows how the developments in medical imaging have led to a number of valuable non-invasive techniques used in hospitals.

The course requirements...

A Grade 7 or higher in GCSE Physics or 7-7 in Combined Science. A Grade 7 or higher in Mathematics and Grade 6 or higher in English GCSE. Physics A Level students should also take A Level Mathematics.