

## Physics

### Entry Requirements

Potential candidates must essentially have achieved **at least a grade B in GCSE Physics**. Students with a B grade will have their performance in the two modules at GCSE closely examined, to determine whether they are making an appropriate choice. It is also **highly desirable that students have at least a grade B in Further Mathematics**, to ensure that they have adequate skills and experience to cope with the mathematical elements that permeate the course.

Physics is the study of how energy interacts with matter. It includes the study of topics such as heat, light, sound, electricity, motion and gravity. The concepts associated with quantum theory, electromagnetic theory and the nature and structure of matter are covered. The CCEA specification which we deliver includes applications of Physics in the areas of astronomy and high-energy particle accelerators. It is a challenging and enlightening programme, presenting students with opportunities to develop highly-prized skills of analysis and deduction, interpretation and experimentation.

### AS and A2 courses

#### Scheme of Assessment

Module	Content
<b>AS 1</b> Forces, Energy & Electricity	Students will build on their knowledge and understanding of Newtonian mechanics and electricity, important concepts in explaining many economic and social applications of Physics. Externally assessed written paper, 1 h 45 m 16% of A-level
<b>AS 2</b> Waves, Photons & Astronomy	Students use a wave model to explore aspects of sound and light, and they are introduced to quantum theory and wave–particle duality. In the Astronomy section they learn about the age and size of the Universe. Externally assessed written paper, 1 h 45 m 16% of A-level
<b>AS 3</b> Practical Techniques & Data Analysis	Experimental skills are examined by short practical tasks on one paper, a separate paper tests analysis of experimental results. Externally assessed 2 x 1 h components 8% of A-level

<b>A2 1</b> Momentum, Thermal Physics, Circular Motion, Oscillations, Atomic & Nuclear Physics	The mechanics theory of AS 1 is extended here, through circular motion and oscillatory motion. Thermal Physics introduces modelling to explain gas properties and links to the basic principles of kinetic theory. Important social and economic applications are dealt with in the atomic and nuclear section. Externally assessed written paper, 2 h 24% of A-level
<b>A2 2</b> Fields and their Applications	The fundamentals of Physics, with their numerous applications to everyday life, are covered in this module. Students learn about action-at-a-distance forces, and are introduced to the most up-to-date theories of the structure and nature of matter and experimentation in the Particle Physics section. Externally assessed written paper, 2 h 24% of A-level
<b>A2 3</b> Practical Techniques	The essential skills of planning, implementing, analysis evaluation and communication are built upon, and examined through two externally assessed practical tests and a separate paper requiring the analysis of experimental results. Externally assessed, 2 x 1 h components 12% of A-level

There is no element of coursework. Year 13 students take three AS modules at the end of the first year, constituting the AS award, as outlined. Year 14 students take the further three modules in the summer of their second year, thus completing their A2.

### **Career Opportunities**

Never have there been more or broader career options stemming from studies of Physics at A-level, including those in the fields of Medicine and Health, Environment, Telecommunications, Astrophysics, Energy, Finance, Engineering, Transport, Media, Education and Research.