

## Physics

Physics is a vital, exciting and compelling subject in this technological age. It develops our pupils' abilities to critically analyse scientific studies and technological developments in an ever-changing world. Our A Level Physics course has a reputation for its practical emphasis, as well as its attention to scientific rigor. Physics A Level is highly regarded by all universities. At University our pupils use Physics to go on to study aspects of science, engineering, electronics and medical studies as well as many non-scientific courses such as Management, Architecture and Law.

In the first year of the course, pupils will investigate:

### **Motion Energy and Charge**

- Basic Physics
- Kinematics
- Energy Concepts
- Conduction of Electricity
- Resistance
- D.C. circuits

### **Waves and Particles**

- Waves
- Refraction of light
- Photons
- Matter, Forces and the Universe
- Using radiation to investigate stars

In the second year of the course, pupils will investigate the topics:

### **Oscillations and Fields**

- Vibrations
- Momentum concepts
- Thermal Physics
- Electrostatic and Gravitational fields of force
- Applications to orbits in the solar system and the wider universe

### **Magnetism, Nuclei and Options**

- Capacitance
- B-Fields
- Electromagnetic induction
- Radiation and radioisotopes
- Nuclear energy

Practical work runs throughout the A Level course and is examined in two modules in the Upper Sixth Year. The final section of the syllabus consists of the material above (under magnetism, nuclei and options), as well as treatment of 'open source material' and the study of an option; decided closer to the time of teaching.

The syllabus is substantial. A pupil who decides to take on the challenge of A-level Physics should be prepared to supplement their lessons with plenty of independent learning, particularly reading popular science books and journals, lists of which can be obtained before the start of the summer holidays. Historically, successful pupils have chosen Physics as part of a cohesive group of subjects and have worked hard right from the first half of the Autumn term in the AS year.

The subject stimulates and excites curiosity about phenomena and events in the world; satisfying this curiosity with knowledge and understanding. Physics can engage students at many levels and is a spur to critical and creative thought. Through science, and Physics in particular, candidates understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine - improving the quality of life.

Physics A-level is both challenging and exciting and can be combined with a wide range of other subjects which would usually include Mathematics and Chemistry, although this is not essential.