



## AS/A2 Physics Course Outline

### Overview

The AS and A-Level OCR Physics `A` specification course offered provides a very good basis for students to progress into further education, following courses in physics or engineering, or to enter employment where a knowledge of physics would be useful. Amongst other things the course includes the study of electricity, magnetism, forces, fields, motion and the frontiers of physics. Students are given the opportunity to develop their interest and enthusiasm as they progress through the course where the emphasis is on understanding rather than purely memory work with time spent doing practical, theory and tutorial work. To reinforce what is learnt in class it is expected that students would put in a considerable amount of independent study time to develop their appreciation and enjoyment of this subject and regular assignments will be set. A course textbook will be provided along with the opportunities to practise past papers in tutorial sessions.

### Course Structure and Content

**AS** - Two written Papers and Coursework are completed.

**Unit 1 [G481]:** In this unit students will learn about the importance of units, scalars and vectors, the different types of force, work and energy, conservation of energy, Hooke's law, how objects behave when there is zero net force acting on them, car safety and global positioning systems

**Unit 2 [G482]:** This unit comprises of: electric current, circuits, resistance, electrical power, domestic electrical energy, wave motion, different types/effects on/of waves, quantum physics and wave spectra.

**Unit 3:** Assessed Practical Work

**A2** - Two written Papers and Coursework are completed.

**Unit 4 [G484]:** In this unit the topics of Newton's Laws of motion, collisions, circular motion, gravitational fields, oscillations, states of matter and the thermal properties of matter are taught.

**Unit 5 [G485]:** This unit comprises of magnetic fields, how capacitors work in circuits, nuclear physics, electromagnetic spectrum, ultrasound, the structure of the Universe and the evolution of the Universe.

**Unit 6** - Assessed Practical Work

#### Coursework

Students will be provided with ample opportunities to develop/improve their skills whilst doing practicals in `normal` lessons before they are formally assessed. Candidates complete three tasks set by the examination board for AS and A2. Tasks are marked by teachers in the college using a mark scheme provided by the board. The tasks are split into 3 parts: **qualitative** practical planning/performing skills, **quantitative** analyzing/graphing skills and **evaluative** skills. A mark is taken from the best performance in each task for each part.

## Assessment

**The AS GCE** is assessed at a standard appropriate for candidates who have completed the first year of study (both in terms of teaching time and content) of the corresponding two-year Advanced GCE course, ie between GCSE and Advanced GCSE.

The AS GCE is made up of **three** units, of which **two** are externally assessed and **one** is internally assessed and will include the assessment of practical skills [coursework].

UNIT 1 – Mechanics - 30% of marks. Candidates answer all questions in a 60 minute written paper.

UNIT 2 – Electrons, Waves and Photons – 50% of marks. Candidates answer all questions in a 105 minute written paper.

UNIT 3 – Practical Skills 1 – 20% of final mark.

**The Advanced GCE [A2]** is made up of **six** mandatory units. These include the three units from AS now weighted at 50% [UNIT 1 – 15%, UNIT 2 – 25% and UNIT 3 – 10%] and **three** further units at A2 standard. Once again **two** are assessed in the form of written papers externally and a **third** in the form of practical coursework in a similar way to the AS course.

UNIT 4 – The Newtonian World – 15% of final mark

UNIT 5 – Fields, Particles and Frontiers of Physics – 25% of final mark

UNIT 6 – Practical Skills 2 – 10% of final mark

## Entry Qualifications

Students wishing to study AS/A Level Physics should have at least a grade B at either GCSE Physics or Additional Science. Some ability in mathematics is beneficial with students preferably having a grade B for GCSE Mathematics, but it is not essential to do AS/A2 Mathematics.

## Career Prospects

Progression is generally to higher education and A level Physics is often a requirement to study a range of Engineering degrees, forensic science and traditional Physical Sciences degree courses. Some Universities also require it to be studied for medicine / veterinary degrees. Employers also value AS and A level Physics as they demonstrate your ability to organize information and to think logically.