PHYSICS

Year 12

What are the aims and intentions of this curriculum?

The GCE in A Level Physics is developed to inspire and challenge students of all abilities and aspirations.
The GCE A level Physics is a content-led approach. A flexible approach where the content is divided into topics, each covering different key concepts of physics. As learners progress through the course they will build on their knowledge of the laws of Physics, applying their understanding to solve problems on topics ranging from sub-atomic particles to the entire universe. There are 12 Practical Endorsement activities linked to the areas of content. The practical endorsement comprises Planning, Implementation, Analysis and Evaluation of experiments. The purpose is to endorse the teaching of content/knowledge with skill development. The course will develop their interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with Physics.

Term	Topics	Knowledge and key terms	Skills developed	Assessment
Autumn 1	Developing Math skills in Physics Module 2: Foundations in Physics • Physical quantities and units • Making measurements and analysing data.	Students will learn: - To understand practical techniques and processes in Physics - To use vector diagrams to illustrate forces, a net force, and equilibrium situations	Students are able to: - Identifying hazards and use SI unit with great accuracy. - Use pythagoras' theorem and the angle sum of a triangle to solve various problems involving vectors	- Practical works - SMART Test
Autumn 2	Module 2: Foundations in Physics • Nature of quantities Module 3: Forces and motions • Motion • Forces in action • Work, energy and power	Students will learn: - To explain the vector-scalar distinction as it applies to displacement, distance, velocity, and speed - To apply Newton's first law to explain the motion of objects and apply Newton's second law in calculations relating forces, masses, and accelerations	Students are able to: - Make calculations using ratios and proportional reasoning to convert units. - Use pythagoras' theorem and the angle sum of a triangle to solve various problems involving vectors - Change the subject of an equation to solve mathematical problems when dealing with energies.	- Practical works - SMART Test - PAGS

Spring 1	Module 3: Forces and motions • Materials • Newtons laws of motion and momentum Module 4: Electrons, waves and photons • Charge and current	Students will learn: - To relate changes and differences in motion to appropriate distance-time and velocity-time graphs. - That electromagnetic waves are transverse and are transmitted through space where all have the same velocity.	Students are able to: - Plot two variables from experimental or other data and use y = mx + c. - Sketch relationships which are modelled by equations when studying the photoelectric effect	- Practical works - SMART Test - PAGS
Spring 2	Module 4: Electrons, waves and photons • Energy, power and resistance • Electric current	Students will learn: - To explain that current is a rate of flow of charge and that for a charge to flow, a source of potential difference and a closed circuit are needed.	Students are able to: - Recall that current depends on both resistance and potential difference.	- Practical works - SMART Test PAGS
Summer 1	Module 4: Electrons, waves and photons • Waves • Quantum physics	Students will learn: - About displacement, amplitude, wavelength, period, phase difference, frequency, and speed of wave. - That photons as quanta of energy of electromagnetic radiation.	Students are able to: - Analyse wave profile: displacement-distance graph. - Use the equations E = hf & E = hc/ƛ	- Practical works - SMART Test - PAGS