



THE ARNEWOOD SCHOOL

KEY STAGE 5 PHYSICS



Implementation

At the end of Y11, students complete a transition task designed so that they start the course confident in their prior knowledge and skills. The students reflect on their future careers, exploring opportunities for graduate and apprenticeship routes.

Year 12:

Half term	Curriculum focus	Landmark assessment
Autumn 1	Classes are split between two teachers with one teacher teaching Particles and Radiation, and one teacher Waves. In Particles, we start by looking at the fundamental constituents of the atom, then the stability of nuclei, fundamental interactions, and how particles are classified. In Waves, we look at the properties of waves, then polarisation and interference. Students learn the practical skills needed to determine the wavelength of laser light,	Knowledge recall tests at end of each month. RP (Required Practical) 2a
Autumn 2	In Particles, we use particle classifications and conservation laws to predict particle interactions. We look at the photoelectric effect and evidence for wave-particle duality. In Waves, the students apply their understanding of interference to describe the effect of diffraction gratings and the creation of stationary waves.	Knowledge recall tests at end of each month RP2b RP1
Spring 1	Our new topic this term is Mechanics. We build on students' GCSE knowledge to analyse straight line motion. We apply the equations for uniform acceleration to projectiles. In Waves, we use Snell's Law to predict refraction and to explain total internal refraction. We consider the application of fibre optics	Year 12 January examinations, AO1, AO2 AND AO3 questions RP3
Spring 2	In Mechanics we learn the Principle of Conservation of momentum and relate this to Newton's 3rd law. We apply the conservation of energy and the concept of work done Our new topic this term is electricity. We start by consolidating GCSE ideas of current, pd and resistance and	Knowledge recall tests at end of each month.





	develop these to gain an understanding of diodes, thermistors, and the application of superconductivity.	RP5
Summer 1	In Materials, the students use Hooke's Law, and concepts such as stress and strain to consider plastic behaviour, fracture and brittle behaviour. In Electricity the students use their understanding of pd and resistance to design control circuits using potential dividers. They learn how internal resistance impacts on real circuits.	Knowledge recall tests at end of each month. RP4 RP6
Summer 2	Following a period or revision for the year 12 examinations, we start on the A2 specification by studying the closely linked topics of Circular Motion and Gravitational fields.	Year 12 Summer examinations, full examination papers

Year 13:

Half term	Curriculum focus	Landmark assessment
Autumn 1	In our first topic, Electric Fields, the students take the concept of a field developed in y12 and use this to define and investigate electric field strength and potential. These ideas are then applied to study Capacitance. The Simple Harmonic Motion Topic builds on the work on periodic motion that the students undertook at the end of Y12. We analyse characteristics of SHM and represent it graphically. Mass-spring and simple pendulum systems are studied and the effects of resonance and damping investigated	A03 graded assessment of AS material Knowledge recall tests at end of each month. RP9 RP 7a and 7b
Autumn 2	Magnetic Fields. Continuing our study of fields, we investigate the size and direction of the magnetic force on current carrying wires and moving charges. The students learn how to use rms values to represent ac and the operation of alternators and transformers. Nuclear. This topic builds on knowledge from GCSE. The Inverse square law is investigated and practical considerations such as background count and safe handling of sources is considered,	Knowledge recall tests at end of each month. RP 10 RP12
Spring 1	Magnetic fields. We extend our thinking to the concept of magnetic flux linkage and electromagnetic induction, with use of Faraday's and Lenz's laws.	Year 13 January examinations RP11





	<p>Nuclear. The students relate the random nature of decay to its exponential nature. They consider nuclear stability and fission and fusion processes.</p> <p>Our new topic this term is Thermal Physics. The students consider the concept of ideal gases and develop a model of molecular kinetic theory.</p>	RP 8a and RP 8b
Spring 2	<p>Our options topic is Astrophysics, the teaching of which is shared between both teachers. Fundamental physical principles are applied to the study and interpretation of the Universe. The underlying principles of the optical and radio devices used are covered and their use evaluated. Topics covered are Telescopes, Classification of stars, and Cosmology</p>	AO1-AO3 graded assessment of A2 material Knowledge recall tests at end of each month.
Summer 1	Revision	A level examinations
Summer 2	Course complete	

