

EASTBURY SUBJECT CURRICULUM

Subject	Physics AS level Year 12
Overview	<p>Year 12 students face a difficult challenge in stepping up from GCSE to the AS course. This challenge is multifaceted, such as, concepts, practical skills numerical skills, self-management, problem solving and exam skills. Although some of the material follows on from KS4 the pace and complexity increases greatly and as a result there is a greater expectation for independent study placed on the students.</p> <p>The AS course consists of three units, two theoretical and one practical. The first of the theoretical units is taught during the autumn term and covers mechanics and material properties. During the first part of the spring term the practical unit is conducted with students being assessed on their ability to carry out and report on a scientific investigation. The subject of this investigation is selected from the course content. The majority of the spring term, however, is spent exploring the second theoretical unit on the subjects of wave behaviour, electricity and the nature of light.</p> <p>Throughout the year a number of progress assessments perforate the calendar in order to provide an insight into students' progress and establish their position on the road to achieving their academic aims.</p>
Term by term	
Autumn	<p>The two subjects contributing to unit one are taught concurrently in the autumn term. Both subject areas provide opportunities for students to demonstrate and develop their mathematical manipulation, problem solving, practical skills and prior knowledge which is important at the early stage of the course.</p> <p>Mechanics Primarily exploring the laws of motion drawing on Newton's laws of motion to explain and predict the motion of objects in one and two dimensions in a quantitative manner. Objects moving along a surface, projectile motion and objects moving against gravity are some of the example investigated.</p> <p>Material Properties Exploring the scientific approach to modelling and quantifying the behaviour of substances. Initially investigating solid materials and later going on to fluids and developing an appreciation for the interplay between the microscopic structure and macroscopic properties is fundamental.</p>
Spring	<p>Electricity The fundamental ideas of electrical current, voltage and resistance are used to underpin detailed explanation and calculation of the effect of series and parallel circuits. These principles are extended further to explore semiconductors, resistivity and electrical power supplies.</p> <p>Wave Behaviour Relying heavily on the principle of wave interference and superposition this subject is explored where a whole new vocabulary of scientific terms to describe oscillatory motion is introduced. The fundamental wave properties of</p>

	<p>refraction and diffraction and the consequences of these effects are also investigated.</p> <p>Nature of Light</p> <p>The strange world of quantum mechanics is introduced to the students through providing evidence of the particle properties of light as first established by Einstein.</p>
Summer	<p>Exam Preparation</p> <p>Primarily this term is focused on exam technique and consolidating the students understanding and application of scientific principles to problem-solving in the exam context. This is an important time of year where the fruits of the students labour ripen.</p>
Homework	<p>It is recommended that 4 hours of homework should be carried out each week. A minimum of 2 hours are attributed to specific tasks set by the teaching staff. As an A-level course a great deal of emphasis is placed on the students' self-study and personal organisation skills, in light of this, students are expected to conduct their own self-study when necessary. Self-study resources are provided to the students in the following forms.</p> <ul style="list-style-type: none"> • Edexcel AS Physics , M Hudson and P Fullick, 2008, ISBN 978140589638 • CPG AS-Level Physics, Exam Board: Edexcel, The Revision Guide, ISBN 9781847621290 • https://www.doddlelearn.co.uk/ • http://pastpapers.edexcel.com/content/past-papers/home.html • http://www.iop.org/ • Material is also made available to students via a class shared folder which is accessible to students through the school website.
Additional information	<p>We have IT facilities to support student learning in addition to a raft of scientific apparatus and practical experiments for the students to explore enabling them to develop there scientific enquiry and research skills. The department also provides trips and visits to support learning including a summer trip to the Large Hadron Collider at CERN in Switzerland.</p>
Useful resources	<p>Here are some excellent websites for research and information.</p> <ul style="list-style-type: none"> • Edexcel AS Physics , M Hudson and P Fullick, 2008, ISBN 978140589638 • CPG AS-Level Physics, Exam Board: Edexcel, The Revision Guide, ISBN 9781847621290 • https://www.doddlelearn.co.uk/ • http://pastpapers.edexcel.com/content/past-papers/home.html • http://www.iop.org/ • Material is also made available to students via a class shared folder which is accessible to students through the school website. • http://physicsnet.co.uk/