

EDUQAS A-LEVEL PHYSICS

COURSE CONTENT AND AIMS

Content introduces and reinforces both fundamental principles in physics and more specialised and ‘cutting-edge’ areas in the discipline i.e. Particle Physics; Quantum physics, Electricity; Mechanics and Materials; Waves; Further Mechanics, Fields and Nuclear Physics. Studying this A level in Physics encourages learners to:

- develop essential knowledge and understanding of different areas of the subject and how they relate to each other
- develop and demonstrate a deep appreciation of the skills, knowledge and understanding of scientific methods
- develop competence and confidence in a variety of practical, mathematical and problem-solving skills
- develop their interest in and enthusiasm for the subject, including developing an interest in further study and careers associated with the subject
- understand how society makes decisions about scientific issues and how the sciences contribute to the success of the economy and society.

COURSE STRUCTURE

The course comprises three teaching components:

Component 1: Newtonian physics (Year1: Basic physics, Kinematics, Dynamics and Energy concepts; Year 2: Circular motion, Vibrations, Kinetic theory and Thermal physics).

Component 2: Electricity and the universe (Year 1: Conduction of electricity, Resistance, D.C. circuits, Solids under stress and Using radiation to investigate stars; Year 2: Capacitance, Electrostatic and gravitational fields of force and Orbits and the wider universe).

Component 3: Light, nuclei and options (Year 1: The nature of waves, Wave properties, Refraction of light, Photons, Lasers and Particles and nuclear structure; Year 2: Nuclear decay, Nuclear energy, Magnetic fields, Electromagnetic induction and one of four options (Alternating currents, Medical physics, The physics of sport or Energy and the environment).

TEACHING AND LEARNING

The Eduqas specification is intended to promote a variety of styles of teaching and learning so that the course is enjoyable for all participants. Learners will be introduced to a wide range of physics principles which will allow them to enjoy a positive learning experience whilst gaining an understanding of how nature operates at both microscopic and macroscopic scales. The optional topics have been developed to allow learners to gain an insight into topics in the world of work which use physics on a daily basis. Practical work is an intrinsic part of physics, and is highly valued by higher education. It is imperative that practical skills are developed throughout this course and that an investigatory approach is promoted.

Students taking physics at Budmouth Academy are expected to be highly motivated and organised; they are expected to make their own notes outside of lesson time in preparation for their lessons. In addition to work in class, students are expected to complete 4 hours of independent study a week (both set work and self-directed study). Students receive regular and informative feed-back on their work.

ASSESSMENT

Course content is examined via three written papers for A2 (1 per component). Papers include a variety of short and long-answer questions. In addition, students are expected to have acquired experience and demonstrated numerous practical techniques and skills. These are gained and developed through a set of practicals over the course; students keep a record and portfolio of their practical work. For 'A' Level, a 'Practical Endorsement' ('pass', 'not pass') is awarded as a separate certificate to accompany the 'A' Level examination result.

HIGHER EDUCATION AND CAREER OPPORTUNITIES

A degree or 'A' Level in physics leaves students poised to enter many careers that include but are not limited to traditional physics. The discipline of physics teaches skills that are transferable to many varied careers. These skills include: mathematical modelling, problem solving, designing experiments, interpretation of experimental data, research experience, laboratory and practical technique and communication skills. Study physics and maximise your options!

Careers include: medicine, radiology, biophysics, mathematics, engineering, computer science, oceanography, geophysics, astronomy, meteorology, patent law, journalism, management, education, architecture, optometry.