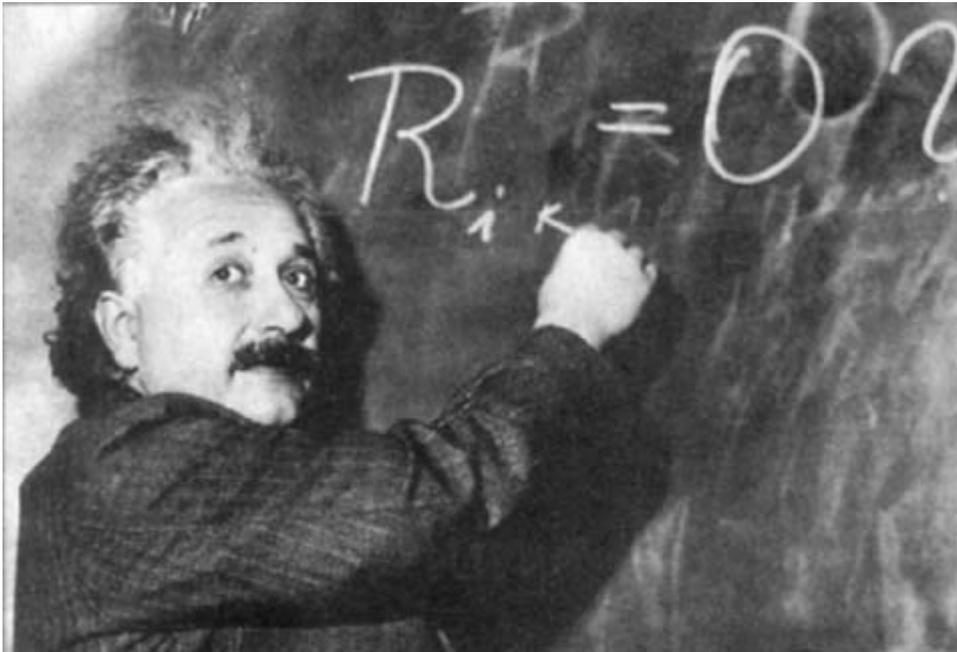




PHYSICS

A Level Subject Information



Students are guided through this course and prepared for the examination by an experienced department, which has an impressive track record in dealing with a wide range of A-level students. Our aim is to build on GCSE performance in order to maximise the outcome at A-level. We take great care to meet the needs of our students, many of which are destined for high profile engineering or science degree courses. (We strongly believe in putting physics into perspective through practical experiments in our lessons and enrichment activities. To stretch and challenge our most able students there is the opportunity to enter the British Physics Olympiad. We have been regularly successful in the UK youth Rocketry Challenge, in 2019 winning the International Final, the first team from the UK to do so. The following gives more detail of the course and the approach to success.

Method of Assessment :

There are three exams taken in June of year 13. All three exams contain short answer questions, synoptic assessment and some extended responses questions. These test students understanding of both theoretical and experimental physics.

During the course learners will also complete a minimum of 12 assessed experiments during lessons to enable to them to achieve the Practical endorsement in physics. This is scored as a pass or fail and is reported separately to the performance in the three exams.

Aims and Objectives

The syllabus provides a course which covers the needs of students who will enter employment at 18+, as well as those who will continue to further education. In doing so, it aims to:

- i foster a knowledge and understanding of physics through an experimental approach
- ii provide an insight into the way in which physics under-pins modern technology
- iii develop manipulative and observational skills
- iv encourage design of experiments and accurate interpretation of results
- v stimulate an interest in the social and economic implications of physics in society
- vi enable students to derive enjoyment and satisfaction from their study of physics.

Course Overview

The course is split into six modules. Modules 1 to 4 constitute the stand-alone AS level and are assessed by **two** 1hour 30mins exam papers. Modules 1 to 6 combined with a practical endorsement constitute the full A' level. This is assessed by **three** exam papers, two of 2hour 15mins (each 37% weighting) and one of 1hour 30mins (26% weighting) plus teacher assessed practical endorsement.

Module 1: Development of practical skills in physics

This unit involves skills of planning, implementing, analysis and evaluation.

Module 2: Foundations Physics

This unit involves the study of physical quantities and units.

Module 3: Forces and Motion

This unit involves the study of Motion; Forces in action; Work, energy and power; Materials; Newton's laws of motion and Momentum.

Module 4: Electrons, waves, and photons

This unit involves the study of Charge and current; Energy, power and resistance; Electrical circuits; Waves and Quantum physics.

Module 5: Newtonian World and Astrophysics

This unit involves the study of Thermal physics; Circular motion; Oscillations; Gravitational fields and Astrophysics.

Module 6: Particles and Medical Physics

This unit involves the study of Capacitors; Electric fields; Electromagnetism; Nuclear and particle physics and Medical imaging.

Comment

Introduction

Physics is a major scientific/technological subject. Much of the science which affects, enriches and eases our lives is based on physics and hence there are few industries, commercial activities, medical technologies, communication systems or forms of entertainment which do not in some way depend upon principles familiar to the physicist. Students holding a qualification in physics are in great demand and are able to choose from a wide range of interesting jobs or courses in higher education. For example, students with A-level physics from The North Halifax Grammar School have gone on to engineering (civil, mechanical, electrical, electronic, nuclear, acoustic and chemical); computing; pure physics research; applied physics research; medicine and the health service (doctor, dentist, radiographer, physiotherapist, psychologist, and biophysicist); television (management, broadcast engineer); finance, teaching and the services.

Who should take Physics?

Any student who wishes to study a science beyond GCSE level will find physics relevant, interesting and enjoyable. For many degree courses E.g. pure science, mechanical engineering, electrical engineering, electronics, computing, materials science, energy studies, geology etc. physics is a required or strongly recommended A-level subject. Students must be prepared to work very hard and show persistence in the face of difficulties. **A very good standard of Mathematics is essential.**

Students must be prepared to undertake background reading and preliminary thinking about experimental work as well as completing note taking, problem solving, practical reports and revision.

Teaching Methods

The course is taught through theory lessons, experiments and self-study packages. Practical work features strongly and is done individually or in small groups. Some experiments may be enhanced through data storage techniques, computer simulations or video recordings. Visits to university laboratories or special lectures are arranged when possible. There will be the opportunity to take part in the British Physics Olympiad and other competitions. In 2019 a team of our year 12 Physics students won the international final of the youth rocketry competition, the first team from the U.K. ever to do so.

Further Details

The following items are available for inspection:

Specific OCR endorsed text books.

Kerboodle- An excellent digital learning resource linked closely to the textbook.

General A level physics texts/revision books.

Any student interested in the course may obtain further information from **Mr D Fountain, Mr J Wilkinson, Mr R Haworth and Mrs K Hudson.**