PHYSICS

Advanced Subsidiary (AS) / Advanced Level (A-Level, A2)

Awarding Body: *EdExcel A-Level Specification 8PH0 / 9PH0*

Course Structure and Content:

Physics is a wide-reaching discipline, studying the complex interactions between matter, energy, and their related subjects, forces, space, and time. Practically, at the A-Level this wide-reaching subject is presented as developing the skills to recognize and answer fundamental questions about the way the world works.

In AS, students will begin by studying the fundamentals of working as a physicist, and then move on to studying mechanics and dynamics, electrics, materials, and wave mechanics, including a large unit on quantum mechanics and the dual nature of light.

For those students who take the A2 Qualification, students will expand on the AS course to study electric, magnetic, and gravitational fields; nuclear radiation and particle physics, thermodynamics, and simple harmonic motion.

The AS Qualification:

The AS Qualification is assessed by two written exams:

Paper 1 includes:

- Mechanics
- Electrics and Electric Circuits
- Experimental Methods

This paper is assessed in 80 marks / 90 minutes

Paper 2 includes:

- Materials
- Wave and Quantum Mechanics
- Experimental Methods (including core practicals)

This paper is assessed in 80 marks / 90 minutes

The A Level Qualification:

The AS Qualification is assessed by three written exams, and includes a practical endorsement:

Paper 1 includes:

- Advanced Mechanics
- Electric and Magnetic Fields
- Advanced Electrics
- Nuclear and Particle Physics

This paper is assessed in 90 marks / 105 minutes

Paper 2 includes:

- Thermodynamics
- Space and Gravitational Fields
- Nuclear Radiation
- Oscillations

This paper is assessed in 90 marks / 105 minutes

Paper 3 includes:

- General questions assessing topics from both AS and A-Level Qualifications
- Experimental Methods (including questions on Core Practicals)

This paper is assessed in 120 marks / 150 minutes

The Practical Endorsement includes:

- 16 Core Practicals, spanning the 2 years of the course.
- These practicals form the core of the A-Level Qualification, as a measure of student's practical skill and understanding of course material.

*Assessed over two years in a separate **practical logbook.***

Teaching and Learning Methods

A wide variety of teaching and learning techniques are used throughout the course.

During the transition to the A-Level, students will be supported in learning to take notes during lecture classes, and be given opportunity to develop their skills in carrying out simple “flipped learning” tasks, including completing class readings before class.

Work will be assessed on a two-week cycle. Students should expect that every two-week cycle their work will be assessed by teachers in one of many fashions; homework questions, sample paper questions, class tests, checks of their practical logbook, or submission of class notes to identify issues with the class.

Students are also expected to complete a *record of further learning*, as it is vital that students develop their own research skills and expand their own depth of knowledge.

Skills and Commitment

Students who apply for this course should have an interest in the natural world, and be curious about how things work. Students will be expected to (regularly) examine a natural phenomenon or event and break it down into component parts, analysing different elements of it as the situation requires.

Additionally, students should enjoy carrying out practical work, and be eager to put what they have learned in class to the test. Essential skills from the GCSE include the ability to work efficiently, safely, and demonstrate a significant interest in the accuracy and implications of practical results.

Finally, students should be comfortable working with maths, and with connecting maths to the real world by applying or deriving formulae as needed. While development of maths skills is a significant part of the course, students should be aware that Physics, as a discipline, puts maths to work in the majority of practical and theoretical situations.

Progression

Pursuing Physics opens a surprising number of options. Physics has historically been one of the foundations for the fields of Engineering, Material Science, Medicine, Power and Infrastructure work, Aviation, IT, Automotive Research, Aerospace, and Electrical Engineering.

Physics boasts a huge number of areas performing research into the fundamental questions of our universe as well; students will be well equipped to pursue higher education in fields including Laser Engineer, System Analytics, Particle Physics Research, Medical Physics, Forensics, Optical Engineers . . .

Entry Requirements

- Grade 6 in 2 Science GCSE’s
- Grade 6 in Maths
- Grade 5 in English is recommended

Thinking of studying more than one AS Science, or taking AS Science with AS Mathematics?

It is strongly recommended that students who study more than one AS Science, or who take AS Science and AS Maths, have grades 7/8 in GCSE Science and Maths.

Reading Materials

The AS Physics Textbook is priced at £20.00, and it is essential that every student has their own copy. A letter with ordering information will be made available at the beginning of the year for students.

Exam packs are made available electronically as they become relevant; should students ask for a hard copy, they will be asked to pay the cost of printing (usually £0.50 per exam pack.)

Contact:

For further information, clarification, or questions, please contact Mr. R Van Schubert, Head of Physics.