

PHYSICS – ADVANCED HIGHER

What are the aims of this course

The purpose of the course is to develop learners' knowledge and understanding of Physics beyond Higher level and give them invaluable experience of applying this to familiar and unfamiliar contexts. This will develop core problem solving skills in pupils beyond the higher course that can be transferred to other subject disciplines.

What are the recommended entry levels for this course?

The Course is suitable for learners who are secure in their learning of Higher Physics. The Course emphasises practical and experiential learning opportunities, with a strong skills-based approach to learning. It is designed for all learners who can respond to a level of challenge, especially those considering further study or a career in physics, engineering and related disciplines. It is expected learners will have a pass (grade A-C) in Higher Physics.

What content is included in this course?

The course consists of four units: **Rotational Motion and Astrophysics; Quanta and Waves; Electromagnetism and Researching Physics.** The Course will develop a critical understanding of the role of physics in scientific issues and relevant applications. It also sets the scene of up to the minute research to give you an understanding of the current advances in physics. It aims to further develop an understanding of scientific literacy, using a wide range of resources, in order to communicate complex ideas and issues and to make scientifically informed choices.

What skills will I develop?

The Course aims to enable learners to:

- extend and apply knowledge, understanding and skills of physics
- develop and apply the skills to carry out complex practical scientific activities, including the use of risk assessments, technology, equipment and materials
- develop and apply scientific inquiry and investigative skills, including planning and experimental design
- develop and apply analytical thinking skills, including critical evaluation of experimental procedures in a physics context
- extend and apply problem solving skills in a physics context
- extend and apply skills of independent/autonomous working in physics

What learning and teaching approaches will I experience?

A range of learning and teaching approaches are used including individual work, group work and cooperative activities. There is an emphasis on practical work, experimental design and data analysis. Content will also be delivered by means of weekly lectures to give you an experience of the styles of learning beyond school.

How will I be assessed?

The Course will be externally assessed within a **question paper and a project**, requiring demonstration of knowledge, skills and understanding acquired from across the Units and how they can be applied in unfamiliar contexts. **The grade achieved is based on the final examination and the project.** All Units are internally assessed on a pass/fail basis. No overall award will be given until all internal assessments have been passed.

What are the homework requirements?

Pupils are set a minimum of **one homework per week**. This could include written tasks, learning or consolidation of knowledge and understanding. There is a much greater emphasis on independent learning and pupils are expected to complete background research and reading.

What are the possible progression routes?

This Course or its Units may provide progression to:

- HND/degree programmes in a physics-based course or a related area, such as physics, astronomy, engineering, environmental and health sciences. The problem solving and numeracy skills developed are applicable in a huge array of further education programs
- careers in a physics-based discipline or related area, or in a wide range of other areas, such as research physicist, astronomer, engineer (for example aeronautical engineering), renewable energy development, technology, environmental monitoring, research and development, management, civil service, education. Additionally the analytical and

numeracy skills developed in the course are highly valued with employers, leading to careers in accountancy and risk assessment (actuary).

Certification:

Advanced Higher Physics is allocated 32 SCQF credit points at SCQF Level 7.