

PHYSICS

PHYSICS: HIGHER

Purpose

This course is designed to reinforce and extend the knowledge and understanding of the concepts of physics and related problem solving and practical abilities acquired in the National 5 Physics course.

Recommended Entry

Students would normally be expected to have attained at least a C grade at National 5 Physics and a pass at National 5 Maths.

Students who have attained C grades at National 5 Physics will find this course challenging.

Course Details

Our Dynamic Universe (Higher)

This unit contains the study of Motion, Forces, Energy, Power, Collisions, Explosions, Gravitation, Special Relativity and the Expanding Universe.

Particles and Waves

This unit contains the study of The Standard Model, Electrical Charge, Nuclear Reactions, Wave Particle Duality, Interference, Refraction of Light and Spectra.

Electricity

This unit contains the study of Alternating Current, Electrical Circuit Theory, Capacitors, Semi-Conductors and p-n junctions.

Researching Physics

The general aim of this Unit is to develop skills relevant to undertaking research in physics. Learners will collect and synthesise information from different sources, plan and undertake a practical investigation, analyse results and communicate information related to their findings. They will also consider any applications of the physics involved and implications for society/the environment.

The Unit offers opportunities for collaborative and for independent learning. Learners will develop knowledge and skills associated with standard laboratory apparatus and in the recording and processing of results. The communication of findings will develop skills in scientific literacy.

Progression

to Advanced Higher Physics

PHYSICS

PHYSICS: ADVANCED HIGHER

Purpose

This challenging course is designed for those who wish to deepen and extend their knowledge and understanding of physics beyond Higher with a view to possible further study of physics or engineering at university or college. There is a considerable emphasis on the use of mathematics to model and describe physical systems.

Recommended Entry

Students must have attained an award at B or above in Higher Grade physics and would be expected to have attained an award at C or above in Mathematics.

Students with an award at C in Higher Physics will find this course very challenging.

Course Details

The course contains 4 main sections

Rotational Motion and Astrophysics

This unit develops knowledge and understanding and skills in physics related to rotational motion and astrophysics. It provides opportunities to develop and apply concepts and principles in a wide variety of situations involving angular motion. An astronomical perspective is developed through a study of gravitation, leading to work on general relativity and stellar physics.

Quanta and Waves

This unit develops knowledge and understanding and skills in physics related to quanta and waves. It provides opportunities to develop and apply concepts and principles in a wide variety of situations involving quantum theory and waves. The unit introduces non-classical physics and considers the origin and composition of cosmic radiation. Simple harmonic motion is introduced and work on wave theory is developed.

Electromagnetism

This unit develops knowledge and understanding and skills in physics related to electromagnetism. It provides opportunities to develop and apply concepts and principles in a wide variety of situations involving electromagnetism. The unit develops knowledge and understanding of electric and magnetic fields and capacitors and inductors used in d.c. and a.c. circuits.

Investigating Physics

In this unit, learners will develop key investigative skills. The unit offers opportunities for independent learning set within the context of experimental physics. Learners will identify, research, plan and carry out a physics investigation of their choice.

Progression

to degree course in physics and related subjects at university or college.