

# National 5 Physics

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## Course Rationale

Physics is the most basic and fundamental science. It is the study of energy, motion and matter. Physics explains 'how things work' and its understanding and application leads to the development of new technologies. You will learn how physics is applied in society and the environment. Physicists are problem solvers. The ability to think 'outside the box' makes people who have studied physics desirable in many career areas including all branches of engineering, telecommunications, clinical science, medicine, computer science, astronomy and renewable energy.

## Course Content

From the sources of the energy we use, to the exploration of space, physics covers a range of applications that affect our lives. Studying physics allows you to gain an insight into the underlying nature of our world and its place in the universe.

The course has three units:

### Physics: Dynamics and Space

In this unit you will investigate the key areas of kinematics and forces (vectors and scalars; velocity–time graphs; acceleration; Newton's laws; energy; projectile motion, space exploration and cosmology

### Physics: Electricity and Energy

Here you will learn about electrical charge carriers; potential difference (voltage); Ohm's law; practical electrical and electronic circuits and electrical power; specific heat capacity; specific latent heat; gas laws and the kinetic model.

### Physics: Waves and Radiation

In this unit you will learn about wave parameters and behaviours; electromagnetic spectrum and the refraction of light; nuclear radiation and its application in industry and medicine.

## Skills

Studying Physics will help you to develop your logical and critical thinking, solve problems and make decisions. You will continue to develop skills in working both independently and with others, and further your numeracy and scientific literacy skills.

**Practical and investigative skills** are developed throughout the course. As part of the course assessment you will use your knowledge and skills to undertake a practical investigation, analyse data and report on your findings.

## Course Assessment

To support your learning, your work will be assessed by your teacher on an on-going basis throughout the course. The Course assessment has two components: a question paper (80%) and an assignment, the report on your practical investigation (20%). Both are completed under exam conditions and will be marked by the by Scottish Qualifications Authority (SQA). The course assessment is graded A–D.

## Progression

If you complete the course successfully, it may lead to Higher physics or further study, training or employment in engineering, science, mathematics or health and medicine.

## Career Pathways

|   |                        |                |                 |          |          |
|---|------------------------|----------------|-----------------|----------|----------|
| Astronaut   | AR/VR programmer       | CAD technician | Doctor          | Dentist  |          |
| Engineer (Aerospace, Automotive, Civil, Electrical, Electronics, Nuclear, Marine, Sound, Structural, Robotics ,Telecoms...) | Engineering technician | Electrician    | Geoscientist    | Mechanic | Optician |
| Oceanographer   | Pilot                  | Radiographer   | Physiotherapist | Surveyor | Vet      |