

National Added Value Unit Specification



Unit title: Physics Added Value Unit (National 4)

SCQF: level 4 (6 SCQF credit points)

Unit code: to be advised

Unit outline

This is the Added Value Unit in the Physics (National 4) Course. The general aim of this Unit is to demonstrate challenge and application in skills of scientific inquiry, investigation, analytical thinking and knowledge and understanding. Learners will investigate a topical physics issue using knowledge and skills drawn from *Energy*, *Space* and *Technology* contexts. Learners are also required to demonstrate their understanding of principles, laws and concepts of physics.

In the assignment, learners will use a variety of approaches and will consider applications of physics on our lives, as well as environmental and/or ethical implications. They will communicate information related to their method used or record of process, findings and conclusion, which will allow demonstration of scientific literacy skills. Learners will also demonstrate their underpinning knowledge and understanding of physics in a test.

Learners who complete this Unit will be able to:

- 1 Investigate a topical issue in physics and how it affects society and/or the environment
- 2 Apply understanding of principles, laws and concepts of physics

This Unit is a mandatory Unit of the Physics (National 4) Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Course Support Notes* which provide advice and guidance on delivery and assessment approaches. Exemplification of the assessment in this Unit is given in the *National Assessment Resource*.

Recommended entry

Entry to this Unit is at the discretion of the centre. It is recommended that the learner should be in the process of completing, or have completed, the following Units in the Physics (National 4) Course:

- ◆ Physics: Technology (National 4)
- ◆ Physics: Space (National 4)
- ◆ Physics: Energy (National 4)

Equality and inclusion

This Unit Specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. For further information please refer to the *Course Support Notes*.

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Standards

Outcomes and assessment standards

Outcome 1

The learner will:

- 1 Investigate a topical issue in physics and how it affects society and/or environment by:**
 - 1.1 Choosing, with support, a topical issue in physics
 - 1.2 Outlining key scientific aspects of the issue
 - 1.3 Planning, with support, how to investigate the issue
 - 1.4 Carrying out the investigation
 - 1.5 Drawing straightforward, reasoned conclusions based on knowledge and understanding of the physics of the issue
 - 1.6 Explaining how the issue affects society and/or the environment
 - 1.7 Communicating the findings of the investigation

Outcome 2

The learner will:

- 2 Apply understanding of principles, laws and concepts of physics by:**
 - 2.1 Describing principles, laws and concepts of physics
 - 2.2 Solving given problems, including making predictions and calculations
 - 2.3 Describing practical applications in real life situations

Evidence Requirements for the Unit

This Added Value Unit is assessed by the teacher/lecturer.

Evidence for this Unit will be generated through an assignment on a topical issue, using skills and knowledge drawn from *Energy*, *Space* and *Technology* contexts; and a test.

Evidence is required to show that the learner has met the Outcomes and Assessment Standards.

Outcome 1

The topical issue could have either a negative or positive impact on the society/environment and could be from an unfamiliar context or from a familiar context investigated in greater depth or from integrating aspects of one or more Units.

- ◆ The assignment topic will be agreed between the learner and the teacher/lecturer.
- ◆ The assignment should be carried out under open-book conditions.
- ◆ The teacher/lecturer will provide overall guidelines for the assignment, which will lead learners through the assignment in clear stages.
- ◆ The teacher/lecturer may also give learners support and guidance to help them progress through each stage of the assignment.

- ◆ Evidence should include:
 - the method used or record of process
 - the findings and conclusions
- ◆ The investigation could include practical work involving the use of equipment.
- ◆ Learners should have flexibility in how they communicate their method used or record of process, findings and conclusions. This can include one or more of the following:
 - a written report
 - oral presentation which may be supplemented by additional material
 - audio/visual or digital presentation using ICT
 - a learning log or journal which may be in electronic or digital form

Outcome 2

The test will assess learners' underpinning knowledge and understanding of principles, laws and concepts of physics selected from across the Course.

- ◆ Learners will complete the test under closed-book conditions.
- ◆ Data booklets and calculators can be used.
- ◆ The test will consist of short response questions.
- ◆ The duration of the test should be no more than 40 minutes.

Further information is provided in the exemplification of assessment in the *National Assessment Resource*. Advice and guidance on possible approaches to assessment is provided in the *Course Support Notes*.

Development of skills for learning, skills for life and skills for work

Please refer to the Course Specification for information about skills for learning, skills for life and skills for work.

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Further mandatory information on Course coverage for the Physics (National 4) Course

The following gives details of mandatory skills, knowledge and understanding for the Physics (National 4) Course. Assessment of this Added Value Unit will involve selecting appropriate skills, knowledge and understanding from those listed below, in line with the Evidence Requirements above. This list of skills, knowledge and understanding also provides the basis for the assessment of all the Units in the Course:

Physics: Energy

- ◆ **energy conservation** — energy conversion, electricity generation, power and efficiency
- ◆ **heat** — heat storage
- ◆ **electricity** — motor effect, current and voltage, circuits, Ohm's law, variable resistors

Physics: Technology

- ◆ **waves** — longitudinal and transverse waves, wave characteristics, electromagnetic radiation, sound, wave calculations, sight defects and correction, law of reflection, and parabolic reflectors
- ◆ **nuclear radiation** — nuclear radiation: sources and effects
- ◆ **motion** — calculations involving distance, time and average speed, speed-time graphs, average speed, instantaneous speed, the relationship between speed and acceleration

Physics: Space

- ◆ **forces and gravity** — linear forces, Newton's laws, gravitational acceleration
- ◆ **information from space** — telecommunications, satellites, speed calculations
- ◆ **the position of Earth in our universe** — the solar system, the galaxy, the universe and astronomical distances

Administrative information



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Superclass: to be advised

History of changes

Version	Description of change	Authorised by	Date

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