Draft
National Unit Specification

Unit title: Physics: Technology (National 5)

SCQF: level 5 (6 SCQF credit points)

Unit code: to be advised

Unit outline

The general aim of this Unit is to develop skills of scientific inquiry and investigation, and the ability to draw on knowledge, demonstrate understanding and describe, in detail, concepts in the context of the physics of technology. This can be done using a variety of approaches, including investigation and problem solving. The Unit will allow learners to study waves and the electromagnetic spectrum, in the context of their uses in current technology, and also to study velocity, acceleration and displacement in the context of transport. Learners will apply these skills when considering the impact on our everyday lives and the environmental and/or ethical implications. Learners will research issues, apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy.

Learners who complete this Unit will be able to:

1 Draw on knowledge, understanding and skills to investigate, through experimentation, physics related to electromagnetic waves/motion
2 Draw on knowledge, understanding and skills to explore nuclear radioactivity
3 Use knowledge and understanding of technology

This Unit is a mandatory Unit of the Physics (National 5) Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Unit Support Notes* which provide advice and guidance on delivery, assessment approaches and development of skills for learning, skills for life and skills for work. Exemplification of the standards in this Unit is given in the *National Assessment Resource*

Recommended entry

Entry to this Unit is at the discretion of the centre. However, learners would normally be expected to have attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

- Physics (National 4) Course or relevant component Units
- Science (National 4) Course or relevant component Units

In terms of prior learning and experience, relevant experiences and outcomes may also provide an appropriate basis for doing this Unit. Further information on relevant experiences and outcomes will be given in the *Unit Support Notes*.

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 *Unit Support Notes.*

Standards

Outcomes and assessment standards

Outcome 1

The learner will:

1 Draw on knowledge, understanding and skills to investigate, through experimentation, physics related to electromagnetic waves/motion by:

1.1 Describing, in detail, a main factor related to the topic
1.2 Identifying an aim/purpose
1.3 Planning and designing an experiment to test an aim/purpose
1.4 Carrying out an experiment to test an aim/purpose
1.5 Recording measurements and observations using appropriate units
1.6 Making a valid conclusion, drawing on knowledge and understanding
1.7 Evaluating an experimental procedure by commenting on the aim/purpose/approach and suggesting an improvement

Outcome 2

The learner will:

2 Draw on knowledge, understanding and skills to explore nuclear radioactivity by:

2.1 Identifying and describing, in detail, a use of nuclear radioactivity
2.2 Explaining the environmental/society implications associated with the application

Outcome 3

The learner will:

3 Use knowledge and understanding of technology to:

3.1 Describe, in detail, processes and concepts in physics
3.2 Solve given problems

Evidence Requirements for the Unit

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners, to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used.

Evidence can be drawn from a variety of sources and presented in a variety of formats.

Evidence may be presented for individual Outcomes or gathered for the Unit as a whole, through combining assessment holistically in a single activity. If the latter approach is used, it must be clear how the evidence covers each Outcome.

Concepts to be covered in the Unit will include the physics of waves, nuclear radioactivity, and motion and application.

In these concepts, evidence will be drawn from:

- **waves** — wave parameters, wavespeed calculations, diffraction, refraction, critical angle, optical fibres, electromagnetic spectrum
- **nuclear radioactivity** — atomic structure, background and absorption of radiation, half life, radiological protection and safety
- **motion and application** — distance and displacement, speed and velocity, acceleration and velocity, momentum and collisions

Exemplification of assessment will be provided in the *National Assessment Resource*. Advice and guidance on possible approaches to assessment is provided in the *Unit Support Notes.*

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

It is expected that learners will develop broad, generic skills through this Unit. The skills that learners will be expected to improve on and develop through the Unit are based on SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work* and drawn from the main skills areas listed below. These must be built into the Unit where there are appropriate opportunities.

1 Literacy

1.1 Reading

2 Numeracy

2.1 Number processes
2.2 Money, time and measurement
2.3 Information handling

5 Thinking skills

5.3 Applying
5.4 Analysing and evaluating

Amplification of these is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work.* The level of these skills should be at the same SCQF level of the Unit and be consistent with the SCQF level descriptor. Further information on building in skills for learning, skills for life and skills for work is given in the *Unit Support Notes.*

Administrative information

Published: August 2011 (draft version 1.0)

Superclass: to be advised

History of changes

Version	Description of change	Authorised by	Date