Draft National Unit Specification

Unit title: Researching Physics (Higher)

SCQF: level 6 (3 SCQF credit points)

Unit code: to be advised

Unit outline

The general aim of this Unit is to develop skills of scientific inquiry, investigation and the ability to apply practical skills, theory, analysis, synthesis and thinking skills in order to undertake research in physics. Learners will review background information, and plan and undertake a practical investigation related to the physics behind a topical issue. Learners will develop and apply these skills when considering the relevance of the physics to everyday life and the environmental and/or social implications of the topical issue. Learners will research issues, apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy.

The Unit offers opportunities for collaborative and independent learning set within the context of an evaluation of scientific issues. Candidates will develop skills associated with collecting and synthesising information from a number of different sources. Equipped with knowledge of standard laboratory apparatus, they will plan and undertake a practical investigation related to the topical issue.

Learners who complete this Unit will be able to:

1 Draw on knowledge, understanding and skills to research the underlying physics of a topical issue
2 Draw on knowledge, understanding and skills to investigate, through experimentation, the underlying physics of the topical issue in physics

This Unit is a mandatory Unit of the Higher Physics 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*.

The Course Assessment Specification for the Higher Physics Course gives further mandatory information on Course coverage for learners taking this Unit as part of the Higher Physics Course.

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 5) Course or relevant component Units

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 research the underlying physics of a topical issue by:

1.1 Gathering information from at least two sources to describe the underlying physics of a topical issue
1.2 Describing the everyday use and environmental/social implications arising from the topical issue

Outcome 2

The learner will:

2 Draw on knowledge, understanding and scientific skills to investigate, through experimentation, the underlying physics of the topical issue in physics by:

2.1 Identifying the key question or aim and planning/designing the investigation, including safety measures, to test a hypothesis
2.2 Carrying out the investigation safely, recording observations and accurate results, including units
2.3 Processing and presenting relevant information, using calculations and units where appropriate
2.4 Making a prediction, based on evidence/information, with justification
2.5 Identifying a source of error in the investigation and describing an improvement
2.6 Drawing a valid conclusion and communicating findings, in terms of physics concepts

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, including participation in group tasks/experiments, written responses to questions, presenting information to other groups, and simple digital presentations.

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

The concepts to be covered in this Unit are: analysis, synthesis, and physics theory.

In these concepts, evidence will be drawn from:

- **analysis** — from reference material
- **synthesis** — from reference material , results and physics knowledge
- **physics theory** — *Particles and Waves*, *Electricity*, and *Our Dynamic Universe*

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

(Note: The information given below reflects the initial thinking on significant opportunities for development of skills for learning, skills for life and skills for work. These may be subject to change as the development process progresses.)

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

1.2 Writing

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
5.5 Creating

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: November 2011 (draft version 1.0)

Superclass: to be advised

History of changes

Version	Description of change	Authorised by	Date

Note: readers are advised to check SQA's website: www.sqa.org.uk to ensure they are using the most up-to-date version of the Un