



National 3
Course
Specification



National 3 Physics Course Specification (C757 73)

Valid from August 2013

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Please refer to the note of changes at the end of this Course Specification for details of changes from previous version (where applicable).

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Course outline

Course title: National 3 Physics

SCQF: level 3 (18 SCQF credit points)

Course code: C757 73

Mandatory Units

| | | |
|---------|--|----------------------|
| H256 73 | Physics: Electricity and Energy (National 3) | 6 SCQF credit points |
| H25A 73 | Physics: Waves and Radiation (National 3) | 6 SCQF credit points |
| H258 73 | Physics: Dynamics and Space (National 3) | 6 SCQF credit points |

Recommended entry

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

- ◆ National 2 Science in the Environment

In terms of prior learning and experience, relevant experiences and outcomes may also provide an appropriate basis for doing this Course.

Progression

This Course or its Units may provide progression to:

- ◆ other qualifications in Physics or related areas
- ◆ further study, employment and/or training

Further details are provided in the Rationale section.

Equality and inclusion

This Course 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*.

Rationale

All new and revised National Courses reflect Curriculum for Excellence values, purposes and principles. They offer flexibility, provide more time for learning, more focus on skills and applying learning, and scope for personalisation and choice.

In this Course, and its component Units, there will be an emphasis on skills development and the application of those skills. Assessment approaches will be proportionate, fit for purpose and will promote best practice, enabling learners to achieve the highest standards they can.

This Course provides learners with opportunities to continue to acquire and develop the attributes and capabilities of the four capacities as well as skills for learning, skills for life and skills for work.

All Courses provide opportunities for learners to develop breadth, challenge and application, but the focus and balance of the assessment will be appropriate for the subject area.

Relationship between the Course and Curriculum for Excellence values, purposes and principles

Through learning in physics, learners develop their interest in and understanding of the world. They engage in a wide range of investigative tasks, which allows them to develop important skills to become creative, inventive and enterprising, in a world where the skills and knowledge developed by physics are needed across all sectors of society.

Physics Courses should encourage resourcefulness, which leads to becoming a confident individual. Successful learners in physics think creatively, analyse and solve problems. Physics can produce responsible citizens, through studying the impact it makes on their lives, on the environment, and on society.

The National 3 Physics Course allows learners to understand and investigate the world in an engaging and enjoyable way. It develops learners' ability to think analytically and independently, and to make basic evaluations. The Course provides opportunities for learners to acquire and apply knowledge and develop an informed and ethical view of topical issues. Learners will develop skills in communication, collaborative working and leadership, and apply thinking in familiar contexts to solve problems.

Purpose and aims of the Course

The purpose of the Course is to develop learners' curiosity, interest and enthusiasm for physics in a range of contexts and enables them to develop confidence in recognising the importance of physics ideas in society. The Course is practical and experiential and will foster skills in scientific thinking, set in context and developed through application-led learning.

Learners will acquire basic knowledge of concepts in physics and be able to apply their understanding to practical situations. They will develop skills in making informed decisions and reasoned evaluations on environmental and scientific issues. They will also develop investigative and experimental skills in a physics context, enabling them to become scientifically literate citizens, able to review the science-based claims, which they will meet.

The Course is an up-to-date selection of ideas relevant to the central position of science within our society. Learners will gain an insight into the underlying nature of our world and its place in the universe. From the sources of the energy we use, to the exploration of space, it covers a range of applications of the relationships that have been discovered through experiment and calculation, This Course allows learners to appreciate and contribute to topical scientific debate.

Learners will recognise the impact physics makes on their lives, the environment and society. Throughout this Course, learners will be able to develop their literacy and numeracy skills and other relevant skills for everyday life and employment.

The aims of this Course are to enable learners to:

- ◆ develop basic knowledge and understanding of physics
- ◆ develop an understanding of the role of physics in scientific issues and relevant applications of physics in society and the environment
- ◆ develop scientific inquiry and investigative skills
- ◆ develop scientific analytical thinking skills in a physics context
- ◆ develop the use of technology, equipment and materials, safely, in practical scientific activities
- ◆ develop problem solving skills in a physics context
- ◆ use scientific literacy in everyday contexts
- ◆ establish the foundations for more advanced learning in physics

Information about typical learners who might do the Course

The Course is suitable for learners who have experienced learning across the sciences experiences and outcomes.

The Course may be suitable for those wishing to study physics for the first time.

This Course has a skills-based approach to learning. It takes account of the needs of all learners and provides sufficient flexibility to enable learners to achieve in different ways.

Physics Courses are offered from SCQF level 3 to SCQF level 7.

Vertical progression is possible through these levels, while lateral progression is possible to other qualifications in the sciences. The qualification can also assist entry to employment, training and further education.

Course structure and conditions of award

Course structure

The Course consists of three mandatory Units. Each of the component Units is designed to provide progression to the related Unit at National 4.

Units are statements of standards for assessment and not programmes of learning and teaching. They can be delivered in a number of ways.

Units can be taught sequentially or in parallel to each other. However, learning and teaching approaches should provide opportunities to integrate skills, where possible.

Physics: Electricity and Energy (National 3)

In this Unit, learners will develop skills of scientific inquiry, investigation and knowledge and understanding of electricity and energy. Learners will apply these skills when considering the applications of electricity and energy on our lives, as well as the implications on society/the environment. This can be done by using a variety of approaches, including investigation and problem solving.

The Unit covers the key areas of energy sources, electricity and energy transfer. Learners will research issues, apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy.

Physics: Waves and Radiation (National 3)

In this Unit, learners will develop skills of scientific inquiry, investigation and knowledge and understanding of waves and radiation. Learners will apply these skills when considering the applications of waves and radiation on our lives, as well as the implications on society/the environment. This can be done by using a variety of approaches, including investigation and problem solving.

The Unit covers the key areas of wave properties, light, colour, optical instruments, electromagnetic radiation and sound. Learners will research issues, apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy.

Physics: Dynamics and Space (National 3)

In this Unit, learners will develop skills of scientific inquiry, investigation and knowledge and understanding of dynamics and space. Learners will apply these skills when considering the applications of dynamics and space on our lives, as well as the implications on society/the environment. This can be done by using a variety of approaches, including investigation and problem solving.

The Unit covers the key areas of forces and the solar system. Learners will research issues, apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy.

Conditions of award

To achieve the National 3 Physics Course, learners must pass all of the required Units. The required Units are shown in the Course outline section.

National 3 Courses are not graded.

Skills, knowledge and understanding

Full skills, knowledge and understanding for the Course are given in the *Course Support Notes*. A broad overview of the subject skills, knowledge and understanding that will be covered in the Course is given in this section.

This includes:

- ◆ using, with guidance, physics knowledge and understanding
- ◆ solving simple problems and making decisions
- ◆ carrying out experiments/practical investigations safely
- ◆ using, with guidance, information handling skills, including collecting, presenting and processing information
- ◆ making basic generalisations from evidence/information
- ◆ drawing valid conclusions from evidence/information
- ◆ communicating findings/ information

Skills, knowledge and understanding to be included in the Course will be appropriate to the SCQF level of the Course. The SCQF level descriptors give further information on characteristics and expected performance at each SCQF level (www.sqa.org.uk/scqf).

Assessment

Further information about assessment for the Course is included in the *Course Support Notes*.

Unit assessment

All Units are internally assessed against the requirements shown in the Unit Specification.

They can be assessed on an individual Unit basis or by using other approaches which combine the assessment for more than one Unit.

They will be assessed on a pass/fail basis within centres. SQA will provide rigorous external quality assurance, including external verification, to ensure assessment judgments are consistent and meet national standards.

The assessment of the Units in this Course will be as follows.

Physics: Electricity and Energy (National 3)

Learners who complete the Unit will be able to:

- ◆ apply skills of scientific inquiry and draw on knowledge and understanding of the key areas of this Unit to carry out an experiment/practical investigation
- ◆ draw on knowledge and understanding of the key areas of this Unit and apply scientific skills

Physics: Waves and Radiation (National 3)

Learners who complete the Unit will be able to:

- ◆ apply skills of scientific inquiry and draw on knowledge and understanding of the key areas of this Unit to carry out an experiment/practical investigation
- ◆ draw on knowledge and understanding of the key areas of this Unit and apply scientific skills

Physics: Dynamics and Space (National 3)

Learners who complete the Unit will be able to:

- ◆ apply skills of scientific inquiry and draw on knowledge and understanding of the key areas of this Unit to carry out an experiment/practical investigation
- ◆ draw on knowledge and understanding of the key areas of this Unit and apply scientific skills

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

It is expected that learners will develop broad, generic skills through this Course. The skills that learners will be expected to improve on and develop through the Course 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 Course where there are appropriate opportunities.

2 Numeracy

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

5 Thinking skills

- 5.2 Understanding
- 5.3 Applying

Amplification of these skills is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills will be appropriate to the level of the Course. Further information on building in skills for learning, skills for life and skills for work for the Course is given in the *Course Support Notes*.

Administrative information

Published: June 2013 (version 1.1)

History of changes to National Course Specification

| Course details | Version | Description of change | Authorised by | Date |
|----------------|---------|--|-----------------------------------|-----------|
| | 1.1 | Skills, knowledge and understanding section: amendment to wording to clarify benchmarking. The word 'planning' has been deleted from the third bullet point. | Qualification Development Manager | June 2013 |
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