



Environmental Science (National 4)

Draft National Course Specification



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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: Environmental Science (National 4)

SCQF: level 4 (24 SCQF credit points)

Course code: to be advised

Mandatory Units

Environmental Science: Living Environment (National 4) 6 SCQF credit points

Environmental Science: Sustainability (National 4) 6 SCQF credit points

Environmental Science: Earth's Resources (National 4) 6 SCQF credit points

Added Value Unit

Environmental Science (National 4) 6 SCQF credit points

This Course includes six SCQF credit points for the assessment of added value in the Added Value Unit. Further information on this Unit is provided in the Assessment section.

Recommended entry

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

- ◆ Biology (Access 3) Course or relevant component Units
- ◆ Chemistry (Access 3) Course or relevant component Units
- ◆ Environmental Science (Access 3) Course or relevant component Units
- ◆ Geography (Access 3) Course or relevant component Units
- ◆ Physics (Access 3) Course or relevant component Units
- ◆ Science (Access 3) 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 Course. Further information on relevant experiences and outcomes will be given in the *Course Support Notes*.

Progression

This Course or its components may provide progression to:

- ◆ other SQA qualifications in Environmental Science or related areas
- ◆ further study, employment 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* and the *Course Assessment Specification*.

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 Environmental Science, learners develop their interest in and understanding of the world in an engaging and enjoyable way. 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 in Environmental Science are needed across all sectors of society and the economy.

Environmental Science Courses should encourage resilience, which leads to becoming a confident individual. Successful learners in Environmental Science think creatively, analyse and solve problems. Environmental Science can produce responsible citizens through studying areas such as health, environment and sustainability.

The Course allows learners to understand and investigate the living and non-living world. It develops learners' ability to think analytically, creatively and independently, and to make reasoned evaluations. The Course provides opportunities for learners to acquire and apply knowledge to evaluate environmental issues, assess risk and make informed decisions. This enables learners to develop an informed and ethical view of topical issues. Learners will be able to develop their communication, collaborative working and leadership skills, and be able to apply critical thinking in new and unfamiliar contexts to solve problems.

Purpose and aims of the Course

Science is vital to everyday life and allows us to understand and shape the world in which we live and influence its future. Scientists play a key role in meeting society's needs in areas such as medicine, energy, industry, material development, the environment and sustainability. As the importance and

application of science continues to grow and develop, more trained scientists will be required. It is also important that everyone has an informed view of science.

Environmental Science is an inter-disciplinary Course, which studies natural processes and the Earth's resources and how they are affected by humans. As a result, environmental scientists are at the forefront in tackling issues such as global climate change, pollution, and the degradation of soils, aquatic resources and wildlife habitats. Environmental Science looks at topics like biodiversity, energy resources, power generation, waste reduction, recycling, land use, forestry, agriculture and other areas. Environmental Science uses a problem-solving approach to develop solutions that prevent or reverse environmental deterioration and aim for sustainable practices.

The Course develops scientific understanding of environmental issues. This Course is a broad and up-to-date selection of topics and ideas relevant to the central position of Environmental Science within our society. The Course investigates the Earth's systems and resources, while considering natural and human impact on sustainability.

The Course allows flexibility and personalisation within each Unit and within the Added Value Unit of the Course by allowing choice in the topics studied. The Course has a strong inter-disciplinary nature and aims to develop skills, knowledge and understanding in relevant areas of science and social science. Skills will be developed in each of the Units in the context of discrete areas of content.

The Course aims for learners to:

- ◆ develop scientific and analytical thinking skills in an Environmental Science context
- ◆ develop understanding of environmental issues
- ◆ acquire and apply knowledge and understanding of environmental concepts
- ◆ develop understanding of relevant applications of Environmental Science in society

Information about typical learners who might do the Course

The Course provides opportunities for learners to become scientifically literate citizens, while developing their literacy and numeracy skills. It will also develop learners' investigative and experimental skills in an environmental context. In addition, learners will be able to develop a lifelong interest in Environmental Science and will recognise the impact it makes on their lives, on the lives of others, on the environment and on society.

Through this Course, learners can also develop relevant skills for learning, for use in everyday life and in employment. Due to its inter-disciplinary nature, learners will benefit from studying Environmental Science along with other science subjects and/or Geography, as this will enhance the learner's skills, knowledge and understanding.

Course structure and conditions of award

Course structure

The Course develops skills in an Environmental Science context. Learners will gain knowledge and understanding of Environmental Science and develop this through a variety of approaches, including practical activities.

By completing this Course, learners will develop important skills, attitudes and attributes related to Environmental Science, including: developing scientific and analytical thinking skills in an environmental context; developing understanding of environmental issues; acquiring and applying knowledge and understanding of environmental concepts; and developing understanding of relevant applications of Environmental Science in society.

As well as developing science and social science skills, learners will also gain valuable transferable skills, for learning, life and work.

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

The Environmental Science Course at National 4 has four Units totalling 24 SCQF credit points.

Environmental Science: Living Environment (National 4)

In this Unit, learners will develop knowledge and skills and carry out practical and other learning activities related to the living environment. This will be within the main themes of ecosystems, inter-relationships, and biodiversity. Practical activities could include fieldwork to sample and identify living things and measure non-living factors. Learners will gain an understanding of ecosystems and biodiversity of ecosystems and the influences on them.

Environmental Science: Sustainability (National 4)

In this Unit, learners will develop knowledge and skills and carry out practical and other learning activities related to natural resources and the impact of human activities on them. This will include the background and applications of sustainability. A case study approach will be used to investigate topics such as food production, water use, energy, and waste management. Personalisation and choice will be available through investigating topics such as industrial practices, transport, land use and tourism. This will cover environmental, economic and social impacts, and identifying possible solutions. It will also cover some major issues such as climate change and pollution.

Environmental Science: Earth's Resources (National 4)

In this Unit, learners will develop knowledge and skills and carry out practical and other learning activities related to the living and non-living environment. This will be within the main themes of planet Earth, Earth's materials, and energy. Planet Earth will focus on the components of the Earth, their dynamic nature, the water cycle and weathering, erosion and the rock cycle. Earth's materials will study the formation and extraction and use of resources. Energy will cover the resources used in energy production, renewable and non-renewable resources and fuels.

Environmental Science: Added Value Unit (National 4)

In this Unit, learners will draw on and extend the skills they have learned from across the other Units and demonstrate the breadth of knowledge and skills acquired, in unfamiliar contexts and/or integrated ways.

Conditions of award

To achieve the Environmental Science (National 4) Course, learners must pass all of the required Units, including the Added Value Unit. The required Units are shown in the Course outline section.

National 4 Courses are not graded.

Skills and knowledge

Full skills and knowledge for the Course will be given in the *Course Assessment Specification*. A broad overview of the mandatory subject skills, knowledge and understanding that will be assessed in the Course includes:

- ◆ demonstrating basic knowledge of Environmental Science by making accurate statements
- ◆ applying basic Environmental Science knowledge to straightforward situations, interpreting information and solving problems
- ◆ demonstrating basic understanding of Environmental Science by providing explanations
- ◆ selecting relevant information from a variety of straightforward sources
- ◆ presenting information appropriately in a variety of straightforward forms
- ◆ processing basic information accurately, using calculations, where appropriate
- ◆ planning, designing and carrying out straightforward experimental procedures to test basic hypotheses or to illustrate effects
- ◆ evaluating straightforward experimental procedures
- ◆ drawing simple valid conclusions and giving basic explanations supported by evidence or justification
- ◆ making predictions and generalisations based on straightforward evidence/information

Assessment

Information about assessment for the Course will be included in the *Course Assessment Specification*, which will provide full details including advice on how a learner's overall attainment for the Course will be determined.

Unit assessment

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

They can be assessed on a Unit-by-Unit basis or by combined assessment.

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:

Environmental Science: Living Environment (National 4)

Learners who complete the Unit will be able to:

- ◆ demonstrate planning, designing, carrying out and evaluating experimental procedures or investigations in the context of the living environment
- ◆ demonstrate skills of applying knowledge and understanding related to living environment

Environmental Science: Sustainability (National 4)

Learners who complete the Unit will be able to:

- ◆ demonstrate selecting, processing, presenting and evaluating information in the context of sustainability
- ◆ demonstrate skills of applying knowledge and understanding related to sustainability

Environmental Science: Earth's Resources (National 4)

Learners who complete the Unit will be able to:

- ◆ demonstrate analysing and evaluating information, drawing conclusions, giving explanations and making predictions in the context of the Earth's resources
- ◆ demonstrate skills of applying knowledge and understanding related to Earth's resources

Added Value Unit

Courses from National 4 to Advanced Higher include assessment of [added value](#)¹. At National 4, added value will be assessed in an Added Value Unit. The Added Value Unit will address the key purposes and aims of the Course as defined in the Course Rationale. It will do this by addressing one or more of breadth, challenge or application.

¹ Definitions can be found here: www.sqa.org.uk/sqa/45528.html

successful learner, confident individual, responsible citizen, effective contributor

In this Course, the Added Value Unit will focus on breadth and application.

Learners will draw on and extend the skills they have learned during the Course. This will be assessed through both a [project](#)² and a [test](#)³. These will offer opportunities to demonstrate the breadth of knowledge and skills acquired from across the other Units, in unfamiliar contexts and/or integrated ways.

Exemplification of possible assessment approaches for Units will be provided in the *National Assessment Resource*.

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² Definitions can be found here: www.sqa.org.uk/sqa/45528.html

³ See link above for definition.

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 also develop broad, generic skills through this Course. The skills that are likely to be appropriate for this 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

4 Employability, enterprise and citizenship

- 4.6 Citizenship

5 Thinking skills

- 5.3 Applying
- 5.4 Analysing and evaluating

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

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Superclass: to be advised

History of changes to National Course Specification

Course details	Version	Description of change	Authorised by	Date

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