



Higher Environmental Science — draft Course rationale and summary

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Course rationale

Background

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

Higher Environmental Science allows learners to understand and investigate the living and non-living world and their relationships. 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 reasoned decisions. This enables learners to develop an informed and ethical view of complex 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. Environmental science makes a significant contribution to interdisciplinary learning and, in particular, to developing global citizens.

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.

The Course develops scientific understanding of environmental issues. Environmental science is an interdisciplinary subject 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. It involves an understanding of scientific principles, economic influences and political action. Environmental science takes a problem

solving approach to topics like power generation, waste reduction, recycling, land use, forestry, agriculture and a wide range of other areas. Environmental science uses a problem solving approach to develop solutions that prevent or reverse environmental deterioration and aim for sustainable practices.

Due to its interdisciplinary nature, learners can gain additional benefit from studying environmental science along with other science subjects and/or geography, as this will enhance the learner's skills, knowledge and understanding.

The 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 impacts on sustainability. The Course allows flexibility and personalisation within each Unit and within the added value of the Course by allowing choice in the topics studied.

The Course has a strong interdisciplinary 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 to:

- ◆ acquire and apply knowledge and understanding of environmental concepts
- ◆ develop scientific and analytical thinking skills in an environmental science context
- ◆ develop applied problem solving skills in an environmental science context
- ◆ develop understanding of environmental issues
- ◆ develop understanding of relevant applications of environmental science in society
- ◆ develop practical fieldwork skills in an environmental science context

The Course will enable learners to become scientifically literate and environmentally aware citizens, while developing their literacy and numeracy skills. Learners will also be able to develop a lifelong interest in environmental science and will recognise the impact environmental science makes on their lives, the lives of others, the environment and society. Through this Course, they can also develop relevant skills for learning, for use in everyday life and in employment.

Information about typical learners who might do the Course

The Course is suitable for learners who are secure in their attainment of Environmental Science (National 5) or an equivalent qualification.

The Course will be of interest and value to those wishing to develop skills, knowledge and understanding of environmental science. The Course aims to develop learners' interest and enthusiasm for environmental science by using a variety of approaches, with an emphasis on practical activities and outdoor learning opportunities.

This Course uses 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.

The Course will allow opportunities for learners to develop environmental knowledge and skills that directly relate to everyday life, including thinking skills, inquiry and investigative skills, and problem solving and practical skills.

On successful completion of this Course, the learner could progress to:

- ◆ Higher in another science subject or Geography
- ◆ National Certificate Group Awards
- ◆ HNC, HND or degree in Environmental Science or a related area
- ◆ employment

Course summary

Course title: Higher Environmental Science

SCQF level 6 (24 SCQF credit points)

Course outline

Mandatory Units

Environmental Science: Living Environment (Higher) (6 SCQF credit points)

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

Environmental Science: Sustainability (Higher) (6 SCQF credit points)

Course assessment

(6 SCQF credit points)

This Course includes six SCQF credit points for 40 additional programmed hours to allow preparation for Course assessment. The Course assessment covers the added value of the Course. Further information on the Course assessment is provided in the Assessment section.

Course structure and conditions of award

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; and acquiring and applying knowledge and understanding of environmental concepts.

Learners will also develop understanding of relevant applications of environmental science in society, and develop problem solving skills.

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

The Course has three Units totalling 18 SCQF credit points, with an additional six SCQF credit points to allow the use of an extended range of learning and teaching approaches, remediation, consolidation of learning, integration and preparation for external assessment.

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

Environmental Science: Living Environment (Higher)

In this Unit, learners will develop knowledge and skills and carry out practical and other learning activities related to the living (biotic) environment. This will be within the main themes of ecosystems, interrelationships and biodiversity. Practical activities will include fieldwork to sample and identify living things and measure non-living (abiotic) factors in an ecosystem. Learners will gain an understanding of ecosystems and biodiversity of ecosystems, including material and energy flows, ecosystem interrelationships, and the natural and human influences on them.

Environmental Science: Earth's Resources (Higher)

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 such as soil, oil, rocks, minerals and metals. Energy will cover the resources used in energy production, renewable and non-renewable resources, and fuels.

Environmental Science: Sustainability (Higher)

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 be within the main themes of principles of sustainable development, resource use and misuse, and global environmental issues. This will include applications of the principles of sustainability. Resources will include raw materials, energy, land use, waste, food, transport and water. Global environmental issues will focus on problems, solutions and conflicts, such as population, climate change, water, food, biodiversity, energy and pollution.

To gain the award of the Course, the learner must pass all the Units as well as the Course assessment. The required Units are shown in the Course outline section. Course assessment will provide the basis for grading attainment in the Course award.

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Assessment

Information about assessment standards 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 Unit specifications.

They will be assessed pass/fail within centres.

SQA will provide rigorous external quality assurance, including external verification, to ensure assessment judgements are consistent and meet national standards.

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

Course assessment

Courses from National 4 to Advanced Higher include assessment of [added value](#)¹. At National 5, Higher and Advanced Higher, the added value will be assessed in the Course assessment. The added value for the Course must 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 and application.

In the Higher Environmental Science Course, added value will focus on:

- ◆ breadth
- ◆ challenge
- ◆ application

Learners will draw on and extend the skills they have learned during the Course. This will be assessed within a [question paper](#)² and a [case study](#)³ requiring demonstration of the breadth of knowledge and skills acquired from across the Units in unfamiliar contexts and/or integrated ways.

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

² See link above for definitions.

³ See link above for definitions.