



Programme Specification

Environmental Science {Foundation} [Sep][SW][Frenchay][5yrs]

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Section 1: Key Programme Details

Part A: Programme Information

Programme title: Environmental Science {Foundation} [Sep][SW][Frenchay][5yrs]

Highest award: BSc (Hons) Environmental Science

Interim award: BSc Environmental Science

Interim award: DipHE Environmental Science

Interim award: CertHE Environmental Science

Awarding institution: UWE Bristol

Teaching institutions: UWE Bristol

Study abroad: No

Year abroad: No

Sandwich year: Yes

Credit recognition: No

School responsible for the programme: HAS Dept of Applied Sciences, Faculty of Health & Applied Sciences

Professional, statutory or regulatory bodies:

Institution of Environmental Sciences (IES)

Modes of delivery: Sandwich

Entry requirements: For the current entry requirements see the UWE public website.

For implementation from: 01 September 2024

Programme code: F90F-SEP-SW-FR-F900

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The BSc (Hons) Environmental Science (with Foundation Year) programme is a five-year sandwich degree designed to provide a comprehensive foundation in science, and graduates with the knowledge and skills necessary to work effectively in the field of environmental science, for example in environmental regulation, environmental consultancy or environmental biotechnology. It provides an opportunity for students to explore the theory and practice related to the subject of environmental science, and to develop both subject-specific and important generic graduate skills, particularly analytical and communication skills. It aims to develop, in students, an in-depth understanding of the natural world and the potential consequences to the natural environment of a wide range of human activities. Students will also develop a broad understanding of the social, political and economic context within which environmental decisions are made.

The design of the programme enables the student to:

complete a Foundation Year that is designed to prepare learners for success as scientists by studying the breadth and relevance of the natural and social sciences which underpin the BSc (Hons) Environmental Science;

Understand the principles that govern biological, physical and human systems in an environmental context.

Explore the impact of human activities on these systems, and appreciate the relationship between lifestyle choices (including their own) and the sustainable use of environmental resources at a local, regional and global scale.

Develop subject-specific and generic practical, analytical and communication skills which will equip them for the world of work.

Features of the programme: The Environmental Science programme has been developed in consultation with a range of stake holder and has the following key

features:

An interdisciplinary and multi-disciplinary approach to the study of environmental science;

Field work and field experience at local, national and international locations;

The opportunity to spend a year working with leading environmental organisations, at home and abroad;

Built in key skills such as GIS, IT (ECDL), environmental analysis, modelling, species identification, communication, and optional skills in SCUBA and assessing tropical wildlife;

Delivery by experts in their field, drawn from across the university;

High emphasis on the development of practical skills, with excellent facilities to support student learning;

A range of final year options which, along with the research project, allow students to tailor their degree to their specific areas of interest;

Built-in enterprise skills and an understanding of the world of work. In addition, the BSc (Hons) Environmental Science degree is accredited by the Institution of Environmental Sciences (IES).

Educational Aims: The specific aims of the programme are to:

Provide the educational and resource environment which will enable students with a background in science to develop:

A strong scientific understanding of the principles and processes that underpin contemporary environmental issues.

An understanding of environmental issues from a multi-disciplinary and interdisciplinary perspective.

The field, laboratory and investigative skills necessary to undertake independent investigations and analyses of environmental problems, and the presentational skills necessary to communicate their findings to audiences with a variety of backgrounds.

The skills of a literate and numerate student capable of independent learning.

Create a friendly and supportive atmosphere that will enable individual students to use the learning experience at UWE to create a graduate foundation, on which they can develop their future careers and on-going social and educational development.

Provide a curriculum that is enhanced by a balance of experience from both research and consultancy.

Programme Learning Outcomes:

On successful completion of this programme graduates will achieve the following learning outcomes.

Knowledge and Understanding

- A1. The breadth and relevance of the natural and social sciences which underpin the environmental sciences
- A2. A multi-disciplinary and interdisciplinary approach in knowledge and understanding of earth systems
- A3. Processes which shape the natural world including the influence of human activities
- A4. Relevant terminology, nomenclature and classification systems
- A5. Methods of acquiring, interpreting and analysing information and data
- A6. Sustainable use of resources
- A7. The contribution of the environmental sciences to debates on environmental issues

- A8. The contribution of their subject to the knowledge of the world we live in
- A9. The applicability of the environmental sciences to the world of work

Intellectual Skills

- B1. Using theories, paradigms and concepts
- B2. Analysing, synthesising and summarising information
- B3. Collecting evidence, testing hypotheses
- B4. Applying knowledge to problems
- B5. Appreciate moral and ethical issues of investigation

Subject/Professional Practice Skills

- C1. Plan, conduct, report on investigations
- C2. Collect, record and analyse data using in the field and laboratory
- C3. Undertake field and laboratory investigations in a responsible and safe manner
- C4. Reference work appropriately

Transferable Skills and other attributes

- D1. Use a variety of sources of information
- D2. Communicate appropriately to a variety of audiences
- D3. Appreciate issues of sample selection, accuracy, calibration, precision, replicability and uncertainty
- D4. Prepare, process, interpret, present data
- D5. Solve numerical problems
- D6. Use the internet and other electronic sources critically
- D7. Identify individual and collective goals
- D8. Respect the views of others

- D9. Evaluate own performance
- D10. Develop skills for life-long learning
- D11. Personal, academic and career development
- D12. Develop an adaptable, flexible and effective approach to study and work

Assessment strategy: A range of assessment methods are employed to monitor student attainment of the full range of Learning Outcomes. Assessment incorporates the Department's assessment strategy and The QAA Code of Practice on Assessment of Students. The principles, procedures and processes of assessment for each module are described in the module booklet, which is provided to each student and available online at the start of the module. Further, these assessments are summarised in the Assessment Calendar provided via the UWE Portal, which also facilitates the appropriate scheduling of assessment loading. The Final Year optional modules (15 credit) have semester based delivery. This allows assessments to be spread across both semesters for even loading.

Effective learning is achieved by employing a range of assessment approaches across the suite of modules that recognises differential approaches to learning. These include opportunities for placements, field work, and "real-world" assignments. The development of a flexible, inclusive and accessible curriculum ensures a high quality learning experience for all students. The programme incorporates a range of innovative and novel assessments, many utilizing new technologies.

As shown above, Technology Enhanced Learning (TEL) is integral to the subject matter within this programme (see TEL map). Many taught topics are technology rich and TEL is also used to supplement learning and to help student learn through assessment. The mapping demonstrates a range of modern technologies across the programme, but also shows repetition, of technologies, thus re-enforcement of skills. This is particularly important between levels as it provides opportunities for students to become proficient with these media in key areas. The need for proficiency and an emphasis on technology aided skills was identified by employers (e.g. GIS, new media, blogs, web pages, data bases) and this feedback has been used to inform

the assessment strategy.

The Assessment Strategy has been designed to support and enhance the development of both subject-based and generic key skills and allow students to realise their true potential. The focus is on assessments that link directly to employability as well as assessments for learning.

The nature of feedback on student work is varied, and relates to the nature of the work undertaken. Methods of feedback include: detailed comments on scripts; oral feedback; generic or assignment-specific feedback forms; peer assessment; and model answers. As well as supplying feedback on summative assessment, the teaching team also employ feed-forward strategies, both on summative work (for example detailed commentaries provided on drafts for the final year project) and formative assessment, such as in-class tests (using clickers), on-line quizzes, model answers for past exam questions, posters and presentations.

Assessments are designed to achieve the learning outcomes for each module and this is described on the module specification. The range and progression of assessment methods are shown below.

Student support: Transition to HE and student support

BSc(Hons) Environmental Science (with Foundation Year) degree is managed as part of a suite of programmes within the Biological and Environmental Sciences and Science Communication Subject Group. All students are provided with a Programme Handbook which contains information on the Faculty, the University, its regulations and procedures. Detailed information is distributed in guides for each module. At the start of the programme, students undertake a comprehensive induction programme and are introduced to university regulations, aims of the programme, laboratory working, support systems (e.g. Drop-ins, PAL) and their personal tutor. Students also have Inductions at the beginning of their second and final years of study, which are targeted towards the specific needs of their year. Students are allocated a personal tutor and become part of a tutor group (typically < 15 tutees). Adjusting to university life is challenging for Level 4 students and to help with this transition students attend

a short residential field course early in Semester one. Students are supported during their time at UWE by a personal tutor, student advisors and module leaders.

Guidance on year issues is overseen by the Programme Manager, who is supported by the Teaching Team and Associate Head of Department. Issues relating to groups of students are dealt with through the Student Rep / Staff Forum (SRSF) that includes student representatives, who also meet with the Programme Manager on a regular basis. Students who elect to undertake a placement year, are allocated a placement tutor who maintains contact, plans a visit where possible, provides support and liaises with work supervisors. For all students, access to academic staff and the student advisors is via e-mail or by personal access, with most staff offering an office-hours policy facilitating the booking of appointments. The central University counselling and support services also provide assistance and guidance for students. The programme welcomes mature students, and students with disabilities or additional needs. Where possible, and following individual consultation, adjustments are made to practical and field work to allow all students to achieve the learning outcomes of the programme.

Part B: Programme Structure

Year 1

The student must take 120 credits from the modules in Year 1.

Year 1 Compulsory Modules

The student must take 120 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
USSKCJ-30-0	Biology in Practice 2020-21	30
USSKCK-30-0	Chemistry in Practice 2020-21	30
USSKCM-30-0	Investigating and Communicating Science 2020-21	30
USSKCL-30-0	Skills for Science 2020-21	30

Year 2

The student must take 120 credits from the modules in Year 2.

Year 2 Compulsory Modules

The student must take 120 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
USSKAB-30-1	Environment and Society 2021-22	30
USSK5B-30-1	Field Skills 2021-22	30
USSK5C-30-1	Life on Earth 2021-22	30
USSJFB-30-1	The Earth 2021-22	30

Year 3

The student must take 120 credits from the modules in Year 3.

Year 3 Compulsory Modules

The student must take 60 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
USSK5F-30-2	Ecology and Ecosystem Protection 2022-23	30
USSK5G-30-2	Environmental and Field Techniques 2022-23	30

Year 3 Optional Modules

The student must take 60 credits from the modules in Optional Modules.

Module Code	Module Title	Credit
USSKN4-15-2	Atmosphere and Climate 2022-23	15
USSKN5-15-2	Earth Science 2022-23	15
USSKN8-15-2	Environmental Impacts and Mitigation 2022-23	15
USSKNA-15-2	Hydrology to Oceanography 2022-23	15

USSKN7-15-2	The Microbial World 2022-23	15
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Year 4

Students may elect to spend a year out working for an organisation, in an appropriate placement to gain relevant work experience. Credit is achieved through the USSK57-15-3 Professional Practice in Applied Sciences module.

Year 4 Compulsory Modules

The student must take 15 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
USSK57-15-3	Professional Practice in Applied Sciences 2023-24	15

Year 5

The student must take 105 credits from the modules in Year 5.

Year 5 Compulsory Modules

The student must take 60 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
USSJQM-15-3	Energy, Carbon and Climate 2024-25	15
USSKBC-30-3	Research Dissertation Project 2024-25	30
USSJQL-15-3	Sustainable Futures 2024-25	15

Year 5 Optional Modules

The student must take 45 credits from the modules in Optional Modules.

Module Code	Module Title	Credit
USSJKU-15-3	Environmental and Ecological Consultancy 2024-25	15
USSKCD-15-3	Environmental Forensics 2024-25	15
USSKN9-15-3	Environmental Microbiology 2024-25	15
USSKN6-15-3	Global Forest Systems 2024-25	15

USSK55-15-3	Marine Ecosystems 2024-25	15
USSK57-15-3	Professional Practice in Applied Sciences 2024-25	15
USSK58-15-3	Remote Sensing and Geographical Information Systems (GIS) 2024-25	15
USSKCE-15-3	Science Communication 2024-25	15
USSKNB-15-3	Sustainable Food Production 2024-25	15
USSK59-15-3	Tropical Expedition 2024-25	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

The Foundation Year gives students an appropriate grounding in the subject areas of biology, chemistry, physics, mathematics, and psychology. This grounding, in addition to the development of transferable skills, prepares learners to successfully study at Level 4 and beyond. At Levels 4 and above the BSc Environmental Science programme has been designed to provide graduates with the knowledge and skills necessary to work effectively in the field of environmental science. It includes physical, chemical, biological and human processes, and the monitoring and management of natural and human-induced environmental changes. Graduates have an in-depth understanding of key environmental problems, including the sustainable use of resources and climate change, and are able to critically evaluate the range of possible solutions. Students also develop a broad understanding of the social, political, legal and economic context within which environmental decisions are made. The programme also provides opportunities for students to develop important generic graduate skills, particularly analytical and communication skills.

Part D: External Reference Points and Benchmarks

Framework for Higher Education Qualifications

The learning outcomes for the programme have been developed with reference to the qualification descriptors used in the QAA Framework for Higher Education Qualifications. In particular, the learning outcomes for modules at level 4 and level 5

have been considered to be consistent with the award of a Certificate of Higher Education and a Diploma in Higher Education respectively. Graduates of the award achieving an Honours classification will develop an understanding of a complex body of knowledge related to the environmental sciences. In addition, the graduate will develop analytical techniques, problem-solving skills and communication skills that can be applied to a range of employment opportunities.

The environmental programme is underpinned by the Faculty's and the University's 2020 strategy. The programme is based around a research-led, student-centred approach to the acquisition and creation of knowledge, with students taking responsibility for their learning, whilst tutors take responsibility for facilitating that learning.

Subject benchmark statements

This programme maps to the benchmark statements for Earth Sciences, Environmental Sciences and Environmental Studies. The benchmarking statement identifies four key features which should characterise degree programmes in the Environmental/Earth Sciences:

'a holistic, multi-disciplinary and inter-disciplinary approach'.

This is evident in this programme from the breadth of the subject matter, the range of subject specialisms of the tutors involved (in both the analytical and social sciences) and the existence of integrating, 'issues' or case-study based modules and student work.

'the integration of fieldwork, experimental and theoretical investigations'.

At levels 4 and 5 of this programme, students spend typically around 50 per cent of their time involved in practical work of all types (field or laboratory based work, library or internet investigations) and all Level 6 projects involved a high degree of investigation, be they practical or more theoretical (desk-based) in nature.

'quantitative and qualitative approaches to acquiring and interpreting' data.

These approaches are integrated both in the practical work of the student as

highlighted above, and through the lecture and assessment components of the programme, which encourage the students to develop skills in the objective analysis of all type of information and data, in order to recognise, understand and challenge current theories and paradigms. Examples include: the analysis of legal case material; the conducting of public opinion surveys; conducting literature searches and summarising bodies of evidence and opinion.

‘the exploration for, and exploitation of, physical and biological resources in the context of sustainability’.

The diversity and extent of physical and biological resources are introduced at level 4 through the compulsory modules, which also begin the exploration of issues relating to unwise or over-exploitation of these resources. These themes are further explored at level 5 in all modules, which consider the social, economic, legal and political aspects of resource exploitation, as well as its physical consequences (loss of biodiversity, land degradation, pollution). At level 6 more emphasis is placed on precisely defining the impacts of over-exploitation and on investigating appropriate techniques for remediation.

The benchmarking statement also specifies the subject knowledge it expects to be covered to some degree of depth in an Environmental Science degree programme:

‘The Earth as a system’ which is dealt with explicitly in compulsory modules at level 4 and at level 5 but more implicitly throughout the suite of modules taken.

‘Human systems and their interactions with global systems’ which are explored in detail via the interdisciplinary and ‘issues’ based modules and a knowledge of which is underpinned by the compulsory modules at level 4 and 5. Human impacts on environmental systems forms an important theme in most level 6 modules, as well as underpinning most of the research topics investigated as part of the final year Research Project.

‘Inter-disciplinary/multi-disciplinary context’ which is implicit in the structure of the programme, as well as being dealt with explicitly in a range of modules at all three

levels.

‘Activities, patterns, processes, impacts and responses’ including environmental impact assessment, management and sustainable development. These themes are integrated throughout the programme, with knowledge and understanding of activities, patterns and processes typically being obtained at level 4, whilst impacts and responses are investigated in greater breadth and depth at levels 5 and 6.

‘Temporal and spatial scales’ which are dealt with in all modules. It is a specific aim of the programme for students to gain an understanding of the interactions between local issues and actions, and regional and global consequences.

SEEC credit level descriptors (2016)

SEEC credit level descriptors have been used to establish the level of the programme and its modules, and to inform the learning outcomes and assessment criteria at level 4 (Cert. HE), level 5 (Dip. HE), and level 6 (BSc).

These credit levels descriptors inform the following areas:

The development of subject specific knowledge and understanding, generic cognitive and intellectual skills, key/transferrable skills, and subject specific practical skills;

Teaching, learning and assessment strategies that deliver, ensure and assess the attainment of these levels;

The programme level learning outcomes that are reinforced by the modular learning outcomes, teaching, learning and assessment strategies described in individual module specifications.

To ensure the programme is fit for purpose and to gain an in-depth knowledge of the needs of employers, key personal from a range of environmental organisations (local, national and international) have been consulted. These discussions

highlighted the key skills required to produce an employable graduate ready to work in this field. Common themes emerging from these consultations were the need for proficiency in Geographical Information Systems (GIS), data analysis, scientific writing, use of data bases, field-based skills and communication skills.

In addition, the Environmental Science programme has been subject to regular (annual) and periodic (every six years) reviews which have considered the content, learning outcomes, and assessment strategy of the programme, to ensure that it remains current and fit for purpose. These reviews have been informed by external advice from industry (periodic reviews), as well as feedback from our placement providers and alumni. The BSc Environmental Science is accredited by the Institution of Environmental Sciences, and periodic re-accreditation also ensures the 'fit-for-purpose' nature of the programme.

Part E: Regulations

Approved to University Regulations and Procedures.