



Programme Specification

Environmental Science [Sep][SW][Frenchay][5yrs]

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Section 1: Key Programme Details

Part A: Programme Information

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

Highest award: MSci Environmental Science

Interim 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: Not applicable

Modes of delivery: Sandwich

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

For implementation from: 01 September 2024

Programme code: F90A-SEP-SW-FR-F90A

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The MSci Environmental Science programme is a five year sandwich degree designed to provide 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 advanced subject specific skills and important high level transferable graduate and post 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 final masters-level year provides students with the opportunity to develop advanced research skills by undertaking an extensive original research project, and to critically engage with knowledge and understanding that is at the forefront of their academic discipline.

The design of the programme enables the student to:

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

Explore to an advanced level 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 research and practical, analytical and communication skills which will equip them for future research and working in the environmental sector.

Critically evaluate a range of innovative technological enhancements and sustainable adaptations required to meet global environmental challenges linked with increases in population, resource demands and intensification, not only from a

scientific perspective, but also taking into account legislative and socio-economic factors and the role of education.

Features of the programme: The Environmental Science programme has been developed in consultation with a range of stake holders 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.

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

High emphasis on the development of practical skills, with excellent laboratory facilities and fieldwork equipment to support student learning.

A range of Year 4 options which, along with the research projects in both Years 4 and 5, allow students to tailor their degree to their specific areas of interest.

Built-in enterprise skills and an understanding of the world of work.

Familiarisation with both local and global partners/employers.

Attractive bespoke modules on Earth System Science, Scientific Frontiers and Enterprise.

Built in key skills such as GIS, IT, Modelling, identification, communication, contemporary environmental science and technology and optional skills in SCUBA and remote sensing.

Opportunities to develop advanced research skills including cutting-edge techniques for handling and modelling data, environmental science research and technological innovation, and advanced analytical techniques.

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 at an advanced level, and the presentational skills necessary to communicate their findings to audiences with a variety of backgrounds.

The skills of a literate and numerate technologically agile 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 incorporating the latest research and technological innovations from both academic research and industrial partners.

Programme Learning Outcomes:

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

Knowledge and Understanding

- A1. A multi-disciplinary and interdisciplinary approach in knowledge and understanding of earth systems
- A2. Processes which shape the natural world including the influence of human activities
- A3. Relevant terminology, nomenclature and classification systems
- A4. Methods of acquiring, interpreting and analysing information and data
- A5. Sustainable use of resources
- A6. The contribution of the environmental sciences to debates on environmental issues
- A7. The contribution of their subject to the knowledge of the world we live in
- A8. The applicability of the environmental sciences to the world of work

Intellectual Skills

- B1. Using theories and paradigms
- B2. Analyse, synthesise, summarise information
- B3. Collect evidence, test/develop hypotheses
- B4. Apply knowledge to problems
- B5. Independent learning, self manager
- B6. Appreciate moral, ethical issues around investigation

Subject/Professional Practice Skills

- C1. Plan, conduct report on investigation
- C2. Collect, record, analyse data
- C3. Deal with complex issues systematically and creatively
- C4. Undertake lab, field investigations
- C5. Use of technology for mapping, analyzing data

- C6. Undertake research project
- C7. Reference work appropriately

Transferable Skills and other attributes

- D1. Make sound decisions in complex and unpredictable situations
- D2. Use a variety of sources of information
- D3. Communicate appropriately using contemporary technologies
- D4. Appreciate issues of sample selection, accuracy, calibration, precision, replicability and uncertainty
- D5. Prepare, process, interpret data
- D6. Solve numerical problems
- D7. Use the internet and other electronic sources critically
- D8. Respect views of others
- D9. Evaluate individual 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 Year 4 optional modules (15 credits) have semester based delivery. This allows assessments to be spread across both semesters for even loading. In the final, masters-level year, all three modules are taught concurrently.

Effective learning is achieved by employing a range of assessment approaches across the suite of modules that recognise 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.

Technology Enhanced Learning (TEL) is integral to the subject matter within this programme.

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, press releases) and this feedback was 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. 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

MSci Environmental Science (with Foundation Year) is managed as part of a suite of programmes within the Biological and Environmental Sciences and Science Communication Subject Group. Year handbooks are provided at each level providing 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 regulation, 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, third and final years of study, which are targeted towards the specific needs of their year. Students are also supported during their time at UWE by a personal tutor, student advisors and module leaders. Guidance on year issues is overseen by the Programme Leader, who is supported by the Teaching Team and Associate Heads 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 Leader on a regular basis. Students who elect to undertake a placement year, are allocated a placement tutor who will maintain contact, plan a visit where possible and provide support and liaise 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 provide assistance and guidance for students with special needs. The programme welcomes mature students and students with disabilities. When possible, and following individual consultation, adjustments are made to practical and field work to allow all student 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
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 2

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

Year 2 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 2 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

Year 3

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 3 Compulsory Placement Module

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

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

Year 4

The student must take 105 credits from the modules in Year 4.

Year 4 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 4 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
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
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Year 5

The student must take 120 credits from the modules in Year 5.

Year 5 Compulsory Modules

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

Module Code	Module Title	Credit
USSJQE-30-M	Current Issues in Applied Sciences 2025-26	30
USSKM6-60-M	Research in Practice 2025-26	60
USSKM5-30-M	Research with Impact 2025-26	30

Part C: Higher Education Achievement Record (HEAR) Synopsis

This programme has been designed to provide graduates with the knowledge and skills necessary to work effectively in the field of environmental science to an advanced level. 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 critical understanding of key environmental problems, including the sustainable use of resources and climate change, and are able to analytically evaluate the range of possible solutions. Students also develop a deep 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 transferable graduate and post graduate skills, particularly analytical and communication skills.

Part D: External Reference Points and Benchmarks

The Framework for Higher Education Qualifications

The learning outcomes have been developed with reference to the qualification descriptors used in the QAA Framework for Higher Education Qualifications. In particular, the learning outcomes for the modules in the final (Masters) year are considered consistent with the QAA's descriptor for a higher education qualification

at level 7: Master's degree. Graduates of the programme achieving an MSci classification will have developed a systematic understanding and critical awareness of current problems and new insights in key aspects of a complex body of knowledge related to the environmental sciences, much of which is at, or informed by, the forefront of the academic discipline. In addition, graduates will have developed a comprehensive understanding of how established techniques of research and enquiry are used to create and interpret knowledge in their discipline.

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'.

In Years 1 and 2 of this programme, students spend typically around 50% of their time involved in practical work of all types (field or laboratory based work, library or internet investigations) and all Year 4 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 in year 1 through the compulsory modules, which also begin the exploration of issues relating to unwise or overexploitation of these resources. These themes are further explored in year 2 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). In Year 4 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 in Years 1 and 2 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 in Years 1 and 2. Human impacts on environmental systems forms an important theme in most Year 4 modules, as well as underpinning most of the research topics investigated as part of the Year 4 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 four 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 in Year 1, whilst impacts and responses are investigated in greater breadth and depth in Years 2, 3 and 4.

'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), level 6 (BSc), and level 7 (MSci).

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 personnel 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 current BSc 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 Environmental Science 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.

In addition, a recent UWE survey of over 80 employers in the South-West identified transferable skills as top of their list of requirements from any graduate job applicant. These skills included all forms of communication (report writing, oral communication, Powerpoint presentation, data handling, summarising information, lay and scientific, and appropriate communication with peers and seniors) plus all elements of project management (such as planning, working to deadlines, managing multiple tasks, prioritising, working under pressure).

Furthermore, existing students on the BSc (Hons) Environmental Science programme were consulted about the MSci programme. Whilst not all wishing to continue to a Masters level, the students appreciated the flexibility and degree of choice that the MSci structure offers, and recognized that it provides a useful underpinning for those wishing to go into further research on graduating.

Part E: Regulations

Approved to University Regulations and Procedures.