Programme Specification

A statement of the knowledge, understanding and skills that underpin a taught programme of study leading to an award from The University of Sheffield

1	**Programme Title**	Environmental Science
2	**Programme Code**	GEOU210
3	**JACS Code**	F750
4	**Level of Study**	Undergraduate
5	**Final Qualification**	MEnvSci
6	**Intermediate Qualification(s)**	BSc in Environmental Science (GEOU211)
7	**Teaching Institution** (if not Sheffield)	Not applicable
8	**Faculty**	Social Sciences
9	**Home Department**	School of Geography and Planning
10	**Other Department(s) involved in teaching the programme**	School of Biosciences
11	**Mode(s) of Attendance**	Full-time
12	**Duration of the Programme**	4 years
13	**Accrediting Professional or Statutory Body**	Not applicable
14	**Date of production/revision**	November 2019, January 2022; September 2023, September 2024

15. Background to the programme and subject area

The natural environment is of vital importance to us all with its future and sustainability being matters of great modern concern. Human impact is placing increasing stress on the environment but at the same time there is a growing awareness of the problems and of the need to find solutions. This inter-disciplinary programme provides a science-based degree focusing on the aspects of biology, ecology and physical earth sciences which are of particular importance for understanding the natural environment. This science-based programme provides laboratory and field work skills as well as professional skills required to develop a career in this area. As the subject of environmental science is very broad the programme is structured using two specialist routes. This allows students to tailor their training towards areas of particular interest such as global change, ecology and plant biology, environmental pollution and conservation. The student acquires a fundamental understanding of environmental challenges at global scale in year one, complemented with training in research and communication skills. The second year is focused on technical skills essential for developing laboratory and field work, and research design. The third year of study prepares the students for professional practice, through development of independent learning, problem solving and research skills (dissertation), fostering creativity to interpret the world from an environmental perspective. In the final year, student study a series of modules that prepare them for, and guide them through, an extended, supervised independent research project, in addition to studying specialised topics outside of their project area. Further details on all the above can be obtained from the Geography Department web site at: http://www.sheffield.ac.uk/geography.

16. Programme aims

Our aims for the MEnvSci in Environmental Science are as follows:

1. To provide a knowledge-rich understanding of natural environmental science and of the work of environmental scientists through research-led teaching.
2. To give students a sound training in the core laboratory, field work and communication skills required for the scientific study of the natural environment.
3. To give an understanding of how the human impact on ecosystems and environments may be identified, quantified and managed.

4. To enhance students' abilities to develop skills in the acquisition, evaluation and use of environmental information.
5. To develop students' oral, written, numerical, project planning and visual presentation skills.
6. To develop students' abilities in field-based investigations of phenomena within the natural environment.
7. To train students in carrying out personal research projects of an extended nature within a research-rich environment.
8. To develop transferable professional skills within a collaborative context.
9. To enhance the ability of students to present themselves in the labour market or for further training with a broad range of professional skills and abilities.
10. To provide students with feedback over the achievement of the aforementioned aims through self-reflection and assessment.

17. Programme learning outcomes

On graduation students achieving either award will have developed a knowledge and understanding of:	
K1	The scientific study of natural environments using relationships between physical and biological aspects of ecosystems.
K2	The impact of spatial and temporal scale on physical and biological processes.
K3	The scientific attributes of the environment and their value to society.
K4	Monitoring and management of environmental change at local and global scale.
K5	Quantitative methods, qualitative analysis, critical thinking, and written and oral communication needed to conduct high-level work as interdisciplinary research scholars and/or practitioners.
On graduation students achieving the award of MEnvSci will have developed an additional knowledge and understanding of:	
K6	The process of planning and carrying out major research work within the environmental sciences.
K7	Discuss and interpret complex contemporary issues in environmental sciences.

On graduation students achieving either award will have developed the following skills and attributes:	
S1	The ability to use a substantial range of analytical and observational strategies, and their application in environmental problem solving.
S2	Plan and undertake effective laboratory and/or fieldwork and apply good laboratory practice.
S3	Collect, interpret and combine different types of environmental evidence, including using data mining, technical and laboratory-based methods.
S4	Plan, design and execute a piece of rigorous research, including the production of a final report, and demonstrate a critical understanding of the appropriate methodology.
S5	Reflect critically about their roles and identities as experts, citizens, consumers and environmental actors in a complex, interconnected world.
On graduation students achieving the award of MEnvSci will have developed the following additional skills and attributes:	
S6	An ability to plan, implement and critically assess a substantial piece of independent original research.
S7	An ability to critically relate their own work to a breadth of existing knowledge across subject areas related to environmental sciences.

On graduation students achieving either award will have developed transferable skills which will allow them to:	
T1	Search, find and utilise electronic and printed information effectively.
T2	Communicate effectively in writing using a variety of formats.

T3	Communicate effectively orally and use of AV presentation aids, including video-recording.
T4	Organise, plan and manage projects.
T5	Teamwork, identify individual and collective goals and responsibilities and perform in a manner appropriate to these roles.
T6	Reflect on individual and group performance and adjust subsequent approaches.
T7	Analyse and interpret information using a variety of qualitative and quantitative methods.
T8	Negotiate effectively.
T9	Identify and work towards targets for personal, academic and career development.
T10	Self-manage and have the skills underpinning life-long learning (time-management, independent learning, organisational skills, meeting deadlines).
T11	Make informed / justifiable decisions.
T12	Develop an adaptable, flexible and effective approach to study and work.
T13	Approach problem-solving using creativity and curiosity.
On graduation students achieving the award of MEnvSci will have developed additional transferable skills which will allow them to:	
T14	An ability to organise, manage and deliver projects to a masters' standard.

18. Teaching, learning and assessment

Development of the programme learning outcomes is promoted through the following teaching and learning methods:

Active learning is at the centre of disseminating knowledge in this programme. Fundamental concepts are outlined and discussed using lectures, whilst practical skills such as plant identification and analytical quantification of environmental parameters is developed through laboratory or field practicals. Seminars are used for discussing specific aspects of environmental problems, and workshops serve as opportunities to develop group work. Small tutorial sessions are used in year1 for discussing environmental issues and in years2 and 3 for tackling specialist areas, including research for dissertation. Specific units on skills relevant to work in the natural environment are features of the programme throughout all years. Skills are primarily developed through tutorials, practical work, field investigation, teamwork and the production of a research project (dissertation) at year3. Flipped learning is used during laboratory practicals to maximise opportunity to develop knowledge. Supervision of student learning is carried out in small groups (sometimes also involving student teamwork), with individual supervision offered during research projects. Specialist skills are developed by using open-ended problems at year3 supported by teamwork. Self-reflection is encouraged through all years during individual tutorials.

Specific units on skills relevant to work in the natural environment are features of the programme. There are also specific units teaching the principles behind planning original research at year4, and a requirement to attend to get involved in department research seminars. As such students have to engage with the research culture of the department in L4.

Opportunities to demonstrate achievement of the programme learning outcomes are provided through the following assessment methods:

Testing of core knowledge base (K1-K5) depends fundamentally on unseen written examinations, reports, laboratory and field notebooks and coursework relating to core units at years1 and 2. More advanced knowledge in year3 is assessed by a combination of unseen written examinations, coursework, presentations and other set assignments (K1-K5). Evaluation of advanced understanding of Environmental Sciences issues is conducted via development of an individual research project (K6, K7). Students demonstrate the ability to design and conduct innovative research in the submission of a research proposal. Expert knowledge is evidenced from the discussion and interpretation of research project results at the end of the academic year. The students have also opportunities for demonstrating achievement of learning outcomes through additional assessment in individual modules such as presentations and short reports and field and laboratory work.

Monitored achievement of skills and other attributes rests on methods such as submitted laboratory workbooks and cartographic exercises and on assessed elements including coursework projects, fieldwork reports and the

environmental research project. Certain assessments also require reflection and critique of techniques used. Skills are introduced and implemented progressively across all three years, with assessment similarly adopting varying forms at each stage. For example, at year one, the students are introduced to laboratory procedures, whilst at year two they have to plan, design and execute a piece of research under guidance based on field work experiences. The final year environmental research project represents the culmination of this aspect of the programme requiring key skills (S1, S3-S5, T1-T11). Through all year there are opportunities for improving students' working practices through transferable skills (T1-T4. T10-T14).

19. Reference points

The learning outcomes have been developed to reflect the following points of reference:

The department's Learning and Teaching Statement

The research interests of departmental staff and the research strategy of the Department of Geography

University Vision and Strategic Plan

QAA Earth Science, Environmental Science and Environmental Studies Benchmark Statement Dec 2014

The Sheffield Graduate – Sheffield Graduate Attributes

The Sheffield Masters Graduate – Sheffield Masters Graduate Attributes

20. Programme structure and regulations

The programme is offered in full-time study mode only. All students take modules to the value of 120 credits in each year of study.

At year1, students take a mixture of knowledge and skills-based modules in physical science and environmental biology. Students must take 100 credits of core modules on fundamentals of Environmental science. Students must then choose the remaining twenty credits from approved modules in Geography.

At year2, a student must take 60 credits of core modules, including research design, geographical skills and fieldwork modules. The remaining 60 credits are chosen from an approved list of modules in Biosciences and Geography or from a selection of modules in other subjects depending on availability.

At year3 students there are two core modules - a research project (dissertation) and a professional skills module. The 40-credit research project (dissertation) is a piece of independent research into an environmental research topic under the supervision of a member of staff. This involves the analysis (and often collection) of relevant data and the production of a written dissertation describing the work undertaken and any conclusions reached in an appropriate academic style. the project may be field, laboratory or computer based.

To proceed to year4 a student must achieve a weighted mean grade of not less than 65 in the Year3 modules taken in Semester 1. The Examiners may in their discretion recommend that a student who obtains a weighted mean grade of not less than 60 in the Year3 modules taken in Semester 1 be permitted to proceed to Year4. Students who fail to meet these requirements may be permitted to instead become a student for the Degree of BSc in Environmental Science (GEOU211).

At Year4 there are 2 routes a student can take.

In following Route 4A a student must take 90 credits of core modules centred on a major research project (75 credits) in either geo-environmental science or environmental biology and ecology together with a 15 credit Research Design module. The project may be field, laboratory or computer based. The remaining 30 credits can be taken from an approved list of modules in Biosciences and Geography or from a selection of modules available in other subjects depending on availability.

In following Route 4B a student must take 120 credits of core modules from the School of Biosciences including a research project (80 credits), advanced literature review (20 credits) and a skills module (20 credits).

Detailed information about the structure of programmes, regulations concerning assessment and progression, and descriptions of individual modules are published in the University Calendar available on-line at http://www.sheffield.ac.uk/calendar/.

21. Student development over the course of study

At the end of Year 1 students should have:

1. An essential knowledge-rich introduction to natural environmental science.
2. Achieved a common broad foundation in and familiarity with certain basic concepts in natural environmental science.
3. Developed skills in the acquisition of information, both through desk and laboratory-based work and through field investigation.
4. Developed skills in written and oral presentations and in the visual representation of environmental information.

At the end of Year 2, students should have:

5. Enhanced their core knowledge of natural environmental science and developed an understanding of new environmental concepts.
6. Developed awareness of the inter-relationships between different elements within the environmental sciences.
7. Enhanced their skills in the acquisition of information, both through desk and laboratory-based work, and through field investigation.
8. Developed their skill in the handling and analysis of environmental data, biological and geophysical science material by a variety of methods including quantitative and laboratory analysis.
9. Been trained in the execution of environmental fieldwork and research projects.

At the end of Year 3, students should have:

10. Carried out an individual research project work under supervision.
11. Acquired an in-depth knowledge of certain areas of natural environmental science at global scale.
12. Developed an understanding of the human impact on natural environments and how environments may be restored and managed.
13. Developed professional skills in discussion, oral presentation, and task achievement within a collaborative context.

At the end of Year4, students should have:

1. Carried out a major, separate, research project making up half of the year's work under supervision.
2. Acquired an in-depth knowledge of the area of natural environmental science, specific to their project.
3. Increased their ability to analyse, criticise and evaluate alternative viewpoints and strategies within the context of substantive sub-fields of environmental science, and developed an understanding of how their own work fits within existing knowledge, and current advances.
4. Developed their skills in discussion, oral presentation, and task achievement within a research context.

22. Criteria for admission to the programme

Detailed information regarding admission to the programme is available in the University's On-Line Prospectus at www.sheffield.ac.uk/prospective/prospectus.html

23. Additional information

All students are expected to attend a local field class in Year1 and a field class in Year2. These are provided free as part of the degree programme and costs are covered by degree fees. Costs of optional Year 3 field classes are also covered by degree fees however, these modules require a minimum number of students to run – detailed information is provided to students as part of the module selection process for continuing students. Students can obtain up-to-date information on the costs of such field work on the departmental web-site: http://www.sheffield.ac.uk/geography.
This specification represents a concise statement about the main features of the programme and should be considered alongside other sources of information provided by the teaching department(s) and the University. In addition to programme specific information, further information about studying at The University of Sheffield can be accessed via our Student Services web site at http://www.sheffield.ac.uk/ssid.