

Programme Specification: Undergraduate

For students starting in Academic Year 2017/2018

1. Course Summary

Names of programme(s) and award title(s)	BSc (Hons) Environmental Science BSc (Hons) Environmental Science with Work Placement Year BSc (Hons) Environmental Science with International Year (see Annex A for details)
Award type	Single Honours
Mode of study	Full time
Framework of Higher Education Qualification (FHEQ) level of final award	Level 6
Duration	3 years 4 years with either the Work Placement Year or International Year between Years 2 and 3
Location of study	Keele University – main campus
Accreditation (if applicable)	This subject/programme is accredited by: the Institution of Environmental Sciences (IES) – for further details see section 12
Regulator	Higher Education Funding Council for England (HEFCE)
Tuition Fees	UK/EU students: Fee for 2017/18 is £9,250* International students: Fee for 2017/18 is £15,250** The fee for the international year abroad is calculated at 15% of the standard year fee The fee for the placement year is calculated at 20% of the standard year fee
Additional Costs	Refer to section 18

* These fees are regulated by Government. We reserve the right to increase fees in subsequent years of study in response to changes in government policy and/or changes to the law. If permitted by such change in policy or law, we may increase your fees by an inflationary amount or such other measure as required by government policy or the law. Please refer to the accompanying Student Terms & Conditions. Further information on fees can be found at <http://www.keele.ac.uk/studentfunding/tuitionfees/>

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How this information might change: Please read the important information at <http://www.keele.ac.uk/student-agreement/>. This explains how and why we may need to make changes to the information provided in this document and to help you understand how we will communicate with you if this happens.

2. What is a Single Honours programme?

The Single Honours programme described in this document allows you to focus more or less exclusively on Environmental Science. In keeping with Keele's commitment to breadth in the curriculum, the programme also gives you the opportunity to take some modules outside Environmental Science, in other disciplines and in modern foreign languages as part of a 360-credit Honours degree. Thus it enables you to gain, and be able to demonstrate, a distinctive range of graduate attributes.

Environmental Science at Keele is offered as a three-year single honours degree programme or as a four-year, with work placement year or with International Year, degree programme. All pathways will lead to a qualification of BSc Environmental Science. Students taking the work placement year will gain the qualification of BSc Environmental Science *with work placement*, and students taking the international year will gain the qualification of BSc Environmental Science *with International Year*.

3. Overview of the Programme

The BSc (Hons) degree programme in Environmental Science provides you with a solid grounding in each of the key natural science disciplines (Biology, Ecology, Chemistry, Geology) that underpin this interdisciplinary and highly topical subject area. It aims to provide students with the scientific skills and expertise required to tackle many of the world's major environmental (and societal) problems such as climate change, food security, water resources, pollution and conservation. The course at Keele draws on the expertise of scientists within the disciplines of life sciences, chemical sciences and geosciences to emphasise the role and importance of scientific understanding and practical skills in the analysis and management of environmental problems. The first year gives students a sound basis and understanding of the core sciences underpinning the field of environmental science (biological sciences, chemical sciences, geosciences); whilst in later years students can choose to specialize or to maintain a broad environmental science portfolio, while maintaining a strong basis in the skills and techniques of the environmental scientist. This degree structure is designed to cater for those students with general interests in the environment and environmental issues, and for those with clear environmental science career aspirations. Environmental Science is an incredibly exciting and relevant subject for today's society with ever-increasing employment prospects and career opportunities.

4. Aims of the Programme

The aims of the programme are that students successfully completing a degree in Environmental Science will achieve the following programme-level intended learning outcomes (ILOs):

- Have developed a sound scientific understanding of the core natural science disciplines (Biology, Ecology, Chemistry, Geology) that underpin the field of environmental science, irrespective of students' scientific background prior to studying at Keele University, and be able to apply these to environmental problems;
- be able to integrate scientific knowledge, and an awareness of social, economic and ethical issues, to address the management of the environment and tackle environmental problems such as climate change, water pollution, water resource scarcity, atmospheric pollution;
- have gained a wide-range of field and laboratory skills, including the ability to carry out independent research, relevant to the investigation of environmental issues;
- have developed to a high professional standard, employability skills in report writing, information technology, numeracy, oral presentation, team work and independent work, problem solving and searching and evaluating literature and related-resources.

5. What you will learn

The intended learning outcomes of the programme (what students should know, understand and be able to do at the end of the programme), can be described under the following headings:

- Subject knowledge and understanding
- Subject specific skills
- Intellectual skills
- Key or transferable skills (including employability skills)

Subject knowledge and understanding

The nature of the course and the wide choice of options available emphasises the inter-disciplinary nature of the degree programme. Core modules aims to provide a grounding in the natural sciences that underpin the field of environmental science, and also stress the interdisciplinary interaction of different facets of sciences in the environment, whilst the range of option modules available enables the individual student to focus their interests, or to explore the interaction between the natural and social sciences in the understanding of current environmental issues. Individual module specifications should be consulted for specific information on knowledge and understanding obtained from specific modules within the degree programme.

Core natural science modules will allow successful students to demonstrate knowledge and understanding of:

- the application of the geological, biological, ecological and chemical sciences to environmental science
- fundamental principles of chemistry relevant to the Environmental Sciences
- the application of fundamental chemical principles to a range of applications in environmental chemistry
- the internal structure and composition of the Earth and its development since the formation of the Solar System.
- the theory of plate tectonics, its manifestation on the Earth's current surface, and the consequences of its operation in the geological past
- minerals and the three major subdivisions of rocks in terms of how they are formed and how their properties relate to a variety of environmental science issues.
- how rocks and geological events may be dated, both relatively and in terms of the absolute time scale.
- the ways in which populations and communities function and interact
- basic theories and concepts in ecology and conservation
- the ecology and environmental issues of a specified ecosystem
- the impact of human activity, particularly resource exploitation on the Earth's surface and near surface environments (using well-established principles and examples from the forefront of the discipline)
- pressures and threats on terrestrial and aquatic ecosystems as well as the Earth's climate that are related to human activity
- possible options for alternative solutions to environmental problems and their implications for nature and society
- environmental management issues in a range of different environments
- the process and application of a range of analytical techniques relevant to the analysis of the composition of different environmental media (including soil, water, vegetation)
- the major components of the Earth's physical-geographic systems, including patterns of variation in the global environment and connections between global systems and local landscapes
- the different types of geographical evidence in order to explain phenomena of the physical environment
- the essential contributions of geoscience to the economic, environmental and cultural needs of Society
- sustainable chemistry within a global context including the use of chemistry in human processes and the associated environmental implications
- the environmental and social responsibilities of organisations including the benefits to businesses to 'green' their operation and ways this can be achieved
- a key multidisciplinary issue/problem reflecting the student's interests at the forefront of Environmental Science

Subject specific skills

The acquisition of subject specific skills is an important part of the Environmental Science programme. Individual module specifications should be consulted for information on subject-specific skills covered within individual modules

Core natural science modules will allow successful students to demonstrate their ability to:

- carry out and record practical chemistry experiments relevant to the environmental sciences, including the analysis and interpretation of data generated
- describe, explain and apply principles of environmental chemistry and sustainability to investigate and critically appraise case studies, solve problems and interpret data
- observe, collect and analyse data on animal behaviour
- recognise minerals in hand specimen and thin section using a hand lens, petrological microscope and related techniques.
- use techniques for the acquisition, interpretation, analysis and visualisation of geoscience data (e.g. geological maps).
- show knowledge and understanding of geological field skills, and be able to synthesise their observations and interpretations within a geological report.
- demonstrate competency in a range of skills necessary for successful study of environmental science in higher education (e.g. numeracy, IT, visual, oral and written communication)
- demonstrate familiarity with a range of ecological and geochemical laboratory and field techniques.
- collect, synthesize, evaluate and present environmental (geochemical, ecological, geological) data.
- perform calculations involving simple population dynamics models
- work safely in a scientific laboratory, with awareness of standard methods and procedures and with due regard for risk assessment and relevant health and safety regulations
- apply relevant quantitative techniques to the analysis of environmental problems
- manipulate, analyse and interpret data sets relating to an area of environmental science
- design an achievable piece of research applicable to the field of environmental science, showing an ability to synthesize and interrogate the research literature and evaluate and select appropriate techniques
- integrate biological, geological and chemical aspects of field (and laboratory) study by preparing a report/presentation on investigations of several habitats
- evaluate solutions to problems of managing a disturbed/degraded area
- evaluate possible options for alternative solutions to environmental problems
- demonstrate familiarity with a range of field and laboratory techniques appropriate to Environmental Science investigation
- demonstrate technical appreciation of the process and application of a range of analytical techniques relevant to the analysis of the composition of different environmental media
- undertake effective fieldwork with due regard for safety, risk assessment, rights of access, relevant health and safety regulations and sensitivity to the impact of investigations on the environment
- apply their own knowledge, skills and experience to an aspect of current Environmental Science research (through the use of established, analytical scientific methods, literature review, data collection and interpretation etc.) and to have developed the skills necessary to exercise own independent analysis, initiative and self-learning

Intellectual skills

Successful students will be able to:

- recognise and use subject-specific theories, concepts and principles to make reasoned decisions and solve problems
- analyse, synthesise and summarise data and information critically, including prior research
- collect and integrate several lines of evidence to formulate and test hypotheses, and make critical judgements
- apply knowledge and understanding to address familiar and unfamiliar problems
- assess the merits of contrasting theories, explanations and policies
- recognise the moral and ethical issues of investigations and appreciate the need for professional codes

of conduct

- develop an adaptable and flexible approach to study and work
- identify and work towards targets for personal, academic and career development
- take responsibility for their own learning and develop a habit of reflection upon that learning

Key or transferable skills (including employability skills)

Successful students will be able to:

- develop and sustain effective approaches to learning and study, including time management, flexibility, creativity and intellectual integrity
- communicate effectively to a variety of audiences in written, verbal and graphical forms
- work with numerical data using appropriate qualitative and quantitative techniques, as well as computer software packages
- work effectively with a variety of types of information technology to analyse and present information and data, as well as solve numerical problems
- use the internet as a means of communication and a source of information
- demonstrate competence in spatial awareness and observation
- conduct field and laboratory studies
- reference work in an appropriate manner
- work with information handling and retrieval systems using data from a wide range of sources
- work effectively both as an individual and as part of a group or team, recognising and respecting the viewpoints of others
- sustain motivation to work towards a goal over an extended period of time
- recognise responsibilities as a local, national and international citizen

In addition, students taking the four-year 'with work placement' will develop additional employability skills and will be able to:

- evaluate their own employability skills (via a SWOT Analysis) and develop their own intended learning outcomes (ILOs)
- develop, through practice in the work place, the work-related skills identified through their SWOT analysis and ILOs
- apply academic theory learnt as part of the taught degree to real situations in the work place
- critically evaluate their learning from the work placement
- explain how the professional environmental sector operates and what skills are needed to develop their career

For additional skills gained through taking the 'with International Year' see Appendix A.

All skills and intended learning outcomes are taught and assessed by a variety of appropriate means as outlined in the main document.

The Keele Approach to Education

The Environmental Science programme is strongly aligned with the key themes within 'The Keele Approach to Education' - sustainability, internationalisation and employability. The programme ensures that all students have the opportunities to fully develop the capabilities (graduate attributes) of 'The Keele Approach to Education'.

Sustainability

The sustainability of our society is at the core of Environmental Science disciplines, with a focus on environmental issues ranging from pollution to sustainable resource to the causes and impacts of environmental change. In addition to developing a deep understanding of the environmental aspects of sustainability, students also gain an appreciation of social, economic and ethical aspects of sustainability. The programme aims to provide students with the skills and aptitude for working positively towards a sustainable future in their careers

and lives as both students and graduates. Keele has a leading reputation in environmental and sustainability teaching and research and Environmental Science students have myriad opportunities to be part of Keele's exciting sustainability vision, through paid and volunteer opportunities.

Internationalisation

Environmental issues, and the means of tackling these issues, are both global and local in nature. The Environmental Science course uses case studies from around the world to develop an appreciation of different environmental challenges faced in different parts of the world. Students are encouraged to develop a global outlook, to develop a sensitive understanding and awareness of how the environment can be sustainably managed in different global contexts. Specific opportunities beyond the taught content include overseas field courses, research opportunities abroad with partner institutions and organisations, and study abroad opportunities in a wide range of countries from Europe, to South Africa.

Employability

We place a strong emphasis throughout the Environmental Science programme on the 'application' of scientific skills to addressing environmental issues and creating future solutions. Students have the opportunity to carry out a work placement in the environmental sector as part of their degree, through our work placement module in Year-2 or through our 4-year 'with work placement year' degree programme, as well as having opportunities to work with environmental professionals as part of their third-year projects, and as part of field courses. In addition to a subject specific emphasis on employability within the environmental sector, throughout the Environmental Science programme students are able to develop a wide range of generic employability skills from working effectively in teams, to effective written and oral communication skills.

Interdisciplinarity

Keele has always been distinctive in its interdisciplinary approach to learning. The Environmental Science programme continues this tradition with a highly interdisciplinary programme combining the geological, geographical, chemical, and life sciences and their application to environmental issues. This ensures that Environmental Science graduates have a sound scientific background, combined with a truly holistic appreciation of environmental issues and strategies to working towards a more sustainable future.

Keele Graduate attributes

Keele University has identified a set of ten graduate attributes that characterise a successful Keele graduate. Further information about the Keele Graduate Attributes can be found here: <http://www.keele.ac.uk/journey/>.

The Environmental Science programme provides students with the opportunity to develop each of these areas:

1) *An open and questioning approach to ideas, demonstrating curiosity, independence of thought and the ability to appreciate a range of perspectives on the natural and social worlds*

As an Environmental Science student you will:

- Adopt a questioning approach to environmental issues and demonstrate curiosity about the environment around you and about topical environmental issues (e.g., water-resource management, climate change, energy resources)
- Develop, through varied teaching and assessment but especially through practicals, field work and independent research, the ability to think independently and appreciate different perspectives on environmental issues.
- Be encouraged to take a broad range of option modules from the disciplines of Life Sciences, Chemical Sciences, Geographical Sciences and Geological Sciences to appreciate environmental issues and gain a solid scientific understanding of environmental issues.

2) *An appreciation of the development and value of Environmental Science, awareness of its context and links with other disciplines, and awareness of the provisional and dynamic nature of knowledge*

As an Environmental Science student you will:

- Develop an appreciation of the development of Environmental Science as a discipline through reading and discussing cutting-edge research being carried out across a breadth of environmental science topics, and being taught by Environmental Science experts from different disciplinary backgrounds
- Be encouraged to ask questions, develop your own research and ideas through class-led discussions, developing your research capabilities through research training modules, before carrying out your own independent research projects focussed around your ideas and interests
- Learn to tackle Environmental Science issues from different disciplinary perspectives ranging from different core sciences to the social sciences

3) Information literacy: the ability to locate, evaluate and synthesise large amounts of frequently conflicting information, ideas and data

As an *Environmental Science* student you will:

- Be given extensive training and support in developing skills in finding, reading, understanding, and referencing relevant material in a wide range of different formats from scientific and policy reports, to websites, and cutting-edge research articles
- Be able to research and bring together a wide range of environmental science research to construct and support your arguments and ideas
- Gain experience in working with large sets of primary and secondary data, being able to make sense of this and present it effectively

4) The ability creatively to solve problems using a range of different approaches and techniques, and to determine which techniques are appropriate for the issue at hand

Environmental Science is all about solving problems. As an *Environmental Science* student you will:

- develop the skills and aptitude to tackle existing sustainability problems in order to help achieve a more sustainable future
- gain extensive training in research design and a wide range of research techniques applicable to environmental science, culminating in an independent research project on a topic of your choice, often working directly with environmental professionals

5) An appreciation of the social, environmental and global implications of your studies and other activities, including recognition of any ethical implications

Environmental Science disciplines focus on the social, environmental and global implications of society's day-to-day activities. As an *Environmental Science* student you will:

- Develop a sensitive appreciation of the environmental consequences, and their social, global and ethical implications, of both society's and your own individual activities, and the ways to minimise these impacts
- Gain training in assessing safety risks and ethical implications of Environmental Science research
- Study within a School with strong environmental, social and ethical commitments
- Have many opportunities to take part in environmental initiatives at Keele

6) The ability to communicate clearly and effectively in written and verbal forms for different purposes and to a variety of audiences

As an *Environmental Science* student you will:

- Gain training and extensive experience in communicating in a wide-range of different forms from essays, reports, oral presentations to field notebooks
- Gain the confidence and skills to communicate clearly and effectively to different audiences

7) The knowledge, skills, self-confidence and self-awareness actively to pursue your future goals

As an Environmental Science student you will:

- Gain regular, detailed feedback on your work, be encouraged to discuss your work with tutors, helping you to improve rapidly and develop the confidence in your capabilities
- Be actively encouraged to take part in co-curricular opportunities relating to your degree, such as volunteering and taking part in student societies, helping you to gain confidence and self-awareness through applying your skills in a 'real world' environment
- Be encouraged to regularly reflect on your personal development through personal tutoring and an independent reflective approach to your studies developed through module assessments and evaluations
- Be encouraged to regularly reflect on your aspirations and your own development throughout your programme

8) The ability and motivation to participate responsibly and collaboratively as an active citizen in the communities in which you live and work

As an Environmental Science student you will:

- Work both independently and as part of a team, as part of work at Keele and during field courses
- Be encouraged to take up the many co-curriculum opportunities related to your degree (and beyond) to contribute to the University and wider community
- Learn to understand and appreciate the links between your own every-day choices and the wider environment and society

9) A professional and reflective approach, including qualities of leadership, responsibility, personal integrity, empathy, care and respect for others, accountability and self-regulation

As an Environmental Science student you will:

- Be introduced to the work of professional bodies and professional standards in environment and sustainability-related areas
- Be able to effectively reflect on your own capabilities and skills, including having a good awareness of your role in a group including your part in leadership and achieving team harmony
- Be encouraged to adopt a professional approach to your studies, communications and co-curricular activities

10) The flexibility to thrive in rapidly changing and uncertain external environments and to update skills and knowledge as circumstances require

As an Environmental Science student you will:

- Learn many new skills, both practical and cognitive, giving you the confidence to apply yourself to new areas in your future careers and lives
- Be confident in your ability to learn and acquire new skills, and have a passion for continuing to learn
- Gain confidence in your flexibility and adaptability, acquired throughout your programme and in particular through carrying out fieldwork and your independent research project

6. How is the Programme taught?

Learning and teaching methods used on the programme vary according to the subject matter and level of the module. They include the following:

- Lectures
- Tutorials, seminars and workshops
- Problem-solving classes
- Practical classes

- Field courses
- Laboratory classes
- Directed reading
- Group presentations and linked discussion
- Use of e-learning/the Keele Learning Environment (KLE)

Apart from these formal activities, students are also provided with regular opportunities to talk through particular areas of difficulty, and any special learning needs they may have, with their Personal Tutors or module lecturers on a one-to-one basis.

These learning and teaching methods enable students to achieve the learning outcomes of the programme in a variety of ways.

7. Teaching Staff

As Environmental Science is such an interdisciplinary subject, staff that deliver the Environmental Science Programme come from the Schools of Geography, Geology and the Environment, Chemical and Physical Sciences, and Life Sciences, with option modules from the Faculty of Medicine & Health Sciences, and the School of Politics, International Relations, Philosophy and the Environment.

There is a strong emphasis throughout the Environmental Science programme on enhancing the student learning experience, as evidenced by the number of environmental staff who hold teaching qualifications, such as the MA in Learning and Teaching in Higher Education, who are fellows, Senior Fellows and Principals Fellows of the Higher Education Academy (HEA) and who have won awards for their excellence in teaching (e.g., Keele Teaching Excellence Awards, National Teaching Fellowships). Recent curriculum developments within our environmental programmes have been supported by external funds from the Higher Education Academy (HEA) Geography, Earth and Environmental Sciences (GEES) subject centre and the HEA Education for Sustainable Development project. Several staff are actively involved with pedagogic research that seeks to identify ways in which the student learning experience within the environmental sciences can be enhanced.

The University will attempt to minimise changes to our core teaching teams, however, delivery of the programme depends on having a sufficient number of staff with the relevant expertise to ensure that the programme is taught to the appropriate academic standard.

Staff turnover, for example where key members of staff leave, fall ill or go on research leave, may result in changes to the programme's content. The University will endeavour to ensure that any impact on students is limited if such changes occur.

8. What is the Structure of the Programme?

The academic year runs from September to June and is divided into two semesters. The number of weeks of teaching will vary from course to course, but you can generally expect to attend scheduled teaching sessions between the end of September and mid-December, and from mid-January to the end of April.

Our degree courses are organised into modules. Each module is usually a self-contained unit of study and each is usually assessed separately with the award of credits on the basis of 1 credit = 10 hours of student effort. An outline of the structure of the programme is provided in the tables below.

There are four types of module delivered as part of this programme. They are:

- Compulsory core module – a module that you are required to study on this course;
- Optional core module – these allow you some limited choice of what to study from a list of modules;
- Programme approved elective module – subject-related modules that count towards the number of subject credits required by your degree;
- Free-standing elective module – a free choice of modules that count towards the overall credit requirement but not the number of subject-related credits.

Year 1 (Level 4)

The first year of the Environmental Science programme starts by emphasising the fundamental principles of the sciences underpinning the field of Environmental Science and how these are integrated in the discipline of Environmental Science in order to address environmental issues. This broad scientific foundation in the first year leads on to the detailed study of a range of Environmental Science issues and concepts in years 2 and 3.

Students take SIX 15-credit compulsory core modules (total 90 credits), plus TWO programme approved elective modules, or ONE programme approved elective, PLUS a modern language elective module.

Compulsory Core modules	Credits	Programme Approved Elective modules	Credits
Environmental Science Skills	15	Entrepreneurship	15
Introductory Geology for the Environmental Sciences	15	Global Warming or a New Ice Age	15
Fundamentals of Physical Geography	15	People and the Environment	15
Ecology and Environment	15		
Introductory Environmental Chemistry	15		
Greening Business: Employability and Sustainability	15		

Field courses	
Environmental Science Skills (local area)	Introductory field day to explore the different aspects of environmental science at a local field site (1 day).
Environmental Science Skills (North Wales)*	Residential field course in North Wales, looking at the ecology of marine and terrestrial environments and the environmental impacts of historical mining activities, includes a day of lab work at Keele (5 days).

***Note about field courses:** these may change depending on factors such as staff availability, staff changes, staff expertise, costs, student numbers, other factors outside of our control (earthquakes, volcanic eruptions etc.). Locations of 'local area' field days change on a year by year basis.

Year 2 (Level 5)

Students study 105 credits of compulsory core modules and choose ONE option module (15 credits) from the list below. Students studying abroad for one semester do not take the 30-credit module ESC-20079, and instead take 15-credits of this module in the semester that they remain at Keele for.

Compulsory Core modules	Credits	Optional Core modules	Credits
Human Impacts on the Environment: Scientific Perspectives	15	Work Placement module	15
Environmental and Sustainability Impact Assessment and Research Planning	30	Health and the Environment	15
Sustainable Chemistry	15	Dynamic Geographies	15
Environmental Analytical Methods	15	Practical Physical Geography	15
Geoscience and Society	15	Regional Landscapes	15
Living Together - Behaviours, Co-operation and Conflict	15	Reconstructing Past Environments	15
		Research and Analytical Skills	15

Field courses	
Environmental and Sustainability Impact Assessment and Research Planning (Local)	Based in a local country park, students work in project groups to undertake an Environmental Impact Assessment (EIA). (1

Area)	day)
Environmental and Sustainability Impact Assessment and Research Planning Bordeaux, France <u>OR</u> English Lake District*	A residential field course investigating issues of environmental science and management (6-8 days depending on dates of Easter vacation).

***Note about field courses:** *these may change depending on factors such as staff availability, staff changes, staff expertise, costs, student numbers, other factors outside of our control (earthquakes, volcanic eruptions etc.). Current choices for 2017/18 are Bordeaux, southern France or the English Lake District. Locations of 'local area' field days change on a year by year basis.*

Work Placement Year

Students taking the 4-year with 'work placement year' undertake their work placement between Year-2 and Year-3 of their degree programme. During the work placement year, students undertake a work placement (minimum 30 weeks full time (1,050 hours) or equivalent) with an environmentally-focussed company or organisation. Students take the year-long, non-credit bearing module:

Core modules	Credits
Work Placement Year	n/a

Year 3 (Level 6)

In the final year students take Applied Environmental Science Independent Research Project (30 credits) and the core module Contemporary Topics in Environmental Science (15 credits)) plus *five* option modules from the list below.

Compulsory Core modules	Credits	Optional Core modules	Credits
Dissertation	30	Clean Technology	15
Contemporary Topics in Environmental Science	15	Applied Insect Ecology	15
		Applied Fish Biology	15
		Trees in their Environment	15
		Conservation Biology	15
		Natural Hazards	15
		Hydrological and Engineering Geology	15
		Advanced Topics in Sedimentology*	15
		Global Environmental Change	15
		Applied GIS	15
		Coastal Environments	15
		Water Resources	15
		Citizenship and the Environment	15

Field courses: The field courses undertaken during the third year will depend on the modules chosen. It should be noted that for many students their Independent Project work is likely to include a significant amount of fieldwork.

*These modules have pre-requisite requirements

For further information on the content of modules currently offered please visit:

www.keele.ac.uk/recordsandexams/az

Learning Outcomes

Subject Knowledge and Understanding		
Learning Outcome	Module in which this is delivered	Principal forms of assessment (of the Level Outcome) used
<i>Successful students will be able to demonstrate knowledge & understanding of:</i>		
the application of the geological, biological and chemical sciences to environmental science;	All modules	All types of assessment
fundamental principles of chemistry relevant to the Environmental Sciences;	Introductory Environmental Chemistry	Class tests, essays, laboratory practicals
the application of fundamental chemical principles to a range of applications in environmental chemistry		
the internal structure and composition of the Earth and its development since the formation of the Solar System	Introductory Geology for the Environmental Sciences	Computer tasks, GIS Assignment, environmental geophysics practical exercise
the theory of plate tectonics, its manifestation on the Earth's current surface, and the consequences of its operation in the geological past;		
the three major subdivisions of rocks in terms of how they are formed and how their properties relate to environmental science issues;		
how rocks and geological events may be dated, both relatively and in terms of the absolute time scale;		
the ways in which populations and communities function and interact;	Ecology and Environment, Living Together - Behaviours, Co-operation and Conflict	Reports, laboratory practicals, multiple choice exam, science communication portfolio
basic theories and concepts in ecology and conservation;		
the ecology and environmental issues of a specified ecosystem;		
the impact of human activity, particularly resource exploitation on the Earth's surface and near surface environments (using well-established principles and examples from the forefront of the	Introductory Geology for the Environmental Sciences, Human Impacts on the Environment: Scientific Perspectives Environmental Analytical Methods	Computer tasks, GIS assignment, environmental geophysics practical exercise, field course portfolio, technical reports, essays, exams, oral presentation

discipline);		
integrate and apply knowledge of the biological, geological, chemical and social aspects of the fields of environmental science and sustainability	Environmental Sustainability Research Planning and Impact Assessment	Report Field course portfolio
demonstrate understanding of the ideological and philosophical underpinning of different approaches to environmental and sustainability research	Environmental Sustainability Research Planning and Impact Assessment	Research proposal
pressures and threats on terrestrial and aquatic ecosystems as well as the Earth's climate that are related to human activity;	Ecology and Environment, Human Impacts on the Environment: Scientific Perspectives Environmental Analytical Methods	Reports, laboratory practicals, multiple choice exam, field course portfolios, essays, exams, research proposal
possible options for alternative solutions to environmental problems and their implications for nature and society;	Human Impacts on the Environment: Scientific Perspectives Environmental Analytical Methods	Reports, field course portfolios, essays, exams, research proposal, oral presentation
environmental management issues in a range of different environments;		
the process and application of a range of analytical techniques relevant to the analysis of the composition of different environmental media (including soil, water, vegetation);	Environmental Analytical Methods Sustainable Chemistry	laboratory practicals, research proposal
the major components of the Earth's physical-geographic systems, including patterns of variation in the global environment and connections between global systems and local landscapes		
the major components of the Earth's physical-geographic systems, including patterns of variation in the global environment and connections between global systems and local landscapes	Fundamentals of Physical Geography	Essay, exam
the essential contributions of geoscience to the economic, environmental and cultural needs of Society	Geoscience and Society	Oral presentation, portfolio, exam
sustainable chemistry within a global context including the use of chemistry in human processes and the associated environmental	Sustainable Chemistry	Portfolio, group project, poster, report

implications		
the environmental and social responsibilities of organisations including the benefits to businesses to 'green' their operation and ways this can be achieved	Greening Business: Employability and Sustainability	Group project, group report, workbook
a key multidisciplinary issue/problem reflecting the student's interests at the forefront of Applied Environmental Science.	Environmental Analytical Methods Dissertation	Research proposal, dissertation

Subject Specific Skills		
Learning Outcome	Module in which this is delivered	Principal forms of assessment (of the Level Outcome) used
<i>Successful students will be able to:</i>		
carry out and record practical chemistry experiments relevant to the environmental sciences, including the analysis and interpretation of data generated	Introductory Environmental Chemistry Environmental Analytical Methods Sustainable Chemistry	Laboratory practicals, research proposal, class tests, essays, group project
recognise minerals in hand specimen and thin section using a hand lens, petrological microscope and related techniques	Introductory Geology for the Environmental Sciences Environmental Analytical Methods	Computer tasks, GIS Assignment, environmental geophysics practical exercise, oral presentation
use techniques for the acquisition, interpretation, analysis and visualisation of geoscience data (e.g. geological maps)		
show knowledge and understanding of geological field skills, and be able to synthesise their observations and interpretations within a geological report		
demonstrate competency in a range of skills necessary for successful study of environmental science in higher education (e.g. numeracy, IT, visual, oral and written communication);	Environmental Science Skills, Environmental Analytical Methods and all modules	All assessments
demonstrate familiarity with a range of ecological and geochemical laboratory and field techniques	Introductory Environmental Chemistry Ecology and Environment Environmental Analytical Methods Sustainable Chemistry	Laboratory practicals, research proposal, class tests, essays, multiple choice exams
collect, synthesize, evaluate and present environmental (geochemical, ecological, geological) data	All modules	All assessments

perform calculations involving simple population dynamics models	Ecology and Environment	Reports, laboratory practicals, multiple choice exam.
work safely in a scientific laboratory, with awareness of standard methods and procedures and with due regard for risk assessment and relevant health and safety regulations	Ecology and Environment Introductory Environmental Chemistry Introductory Geology for the Environmental Sciences	Reports, laboratory practicals, multiple choice exam, research proposal, class tests, essays, dissertation
apply relevant quantitative techniques to the analysis of environmental problems	Environmental Analytical Methods Sustainable Chemistry	
manipulate, analyze and interpret data sets relating to an area of environmental science	Living Together - Behaviours, Co-operation and Conflict Dissertation	
design an achievable piece of research applicable to the field of environmental science, showing an ability to synthesize and interrogate the research literature and evaluate and select appropriate techniques	Living Together - Behaviours, Co-operation and Conflict Environmental Analytical Methods Dissertation	Research proposal, dissertation
integrate biological, geological and chemical aspects of field (and laboratory) study by preparing a report/presentation on investigations of several habitats	Introductory Environmental Chemistry Introductory Geology for the Environmental Sciences Ecology and Environment Environmental Analytical Methods Dissertation	Reports, laboratory practicals, multiple choice exam, research proposal, class tests, essays, dissertation, field course portfolios
evaluate solutions to problems of managing a disturbed/degraded area	Environmental and Sustainability Impact Assessment and Research Planning	Report, field course portfolio
evaluate possible options for alternative solutions to environmental problems	Human Impacts on the Environment: Scientific Perspectives	Technical report, field course portfolio
demonstrate familiarity with a range of field and laboratory techniques appropriate to Environmental Science investigation	Introductory Environmental Chemistry Introductory Geology for the Environmental Sciences Ecology and Environment Environmental Analytical Methods Dissertation	Reports, laboratory practicals, multiple choice exam, research proposal, class tests, essays, dissertation, field course portfolios
assess solutions to problems of managing disturbed/degraded/disadvantaged areas and demonstrate an	Environmental and Sustainability Research Planning and Impact Assessment	Report Field course portfolio

understanding of environmental management issues in a range of environments and contexts		
apply theoretical knowledge and understanding of environmental science and sustainability issues to specific social, geographical and environmental contexts	Environmental and Sustainability Research Planning and Impact Assessment	Report Field course portfolio Research proposal
demonstrate technical appreciation of the process and application of a range of analytical techniques relevant to the analysis of the composition of different environmental media	Environmental Analytical Methods	Class tests, practical portfolio, research proposal
undertake effective fieldwork with due regard for safety, risk assessment, rights of access, relevant health and safety regulations and sensitivity to the impact of investigations on the environment	Environmental Science Skills Dissertation	Workshop exercises, field course portfolio, research proposal, dissertation
apply their own knowledge, skills and experience to an aspect of current Environmental Science research (through the use of established, analytical scientific methods, literature review, data collection and interpretation etc.) and to have developed the skills necessary to exercise own independent analysis, initiative and self-learning	Environmental Analytical Methods Dissertation	Research proposal, dissertation

Key or Transferable Skills (graduate attributes)		
Learning Outcome	Module in which this is delivered	Principal forms of assessment (of the Level Outcome) used
<i>Successful students will have the opportunity to develop:</i>		
develop effective approaches to learning and study, including time management, flexibility, creativity and intellectual integrity	All modules	All assessments
communication skills enabling them to communicate effectively to a variety of audiences in written, verbal and graphical forms	All modules	All assessments
work with numerical data using appropriate qualitative and quantitative techniques, as well as computer software packages	All modules but specifically: Environmental Science Skills Introductory Geology for the	Laboratory practicals, laboratory reports, field course portfolios, computer practicals, oral presentations, research proposal,

work effectively with a variety of types of information technology to analyse and present information and data, as well as solve numerical problems	Environmental Sciences Introductory Environmental Chemistry Ecology and Environment Living Together - Behaviours, Co-operation and Conflict Environmental Analytical Methods Dissertation	dissertation
use the internet as a means of communication and a source of information	All modules	All assessments
demonstrate competence in spatial awareness and observation	Introductory Geology for the Environmental Sciences, Ecology and Environment, Human Impacts on the Environment: Scientific Perspectives	Practical assessments (involving GIS)
conduct field and laboratory studies	Environmental Science Skills Ecology and Environment Dissertation	Field course portfolios, laboratory reports
reference work in an appropriate manner	All modules	All assessments
work with information handling and retrieval systems using data from a wide range of sources	Environmental Science Skills Environmental Analytical Methods Living Together - Behaviours, Co-operation and Conflict Dissertation	Practical assessments, computer practicals, science communication portfolio, research proposal, dissertation
design a piece of research achievable as a third year dissertation project and applicable to the field of Environment & Sustainability; showing an ability to synthesize the research literature, select appropriate techniques for data collection and analysis, and conduct research ethically and safely	Environmental and Sustainability Research Planning and Impact Assessment	Research proposal
work effectively both as an individual and as part of a group or team, recognising and respecting the viewpoints of others	All modules	All assessments
sustain motivation to work towards a goal over an extended period of time		
recognise responsibilities as a local, national and international citizen		

9. Final and intermediate awards

Credits required for each level of academic award are as follows:

Honours Degree	360 credits	You will require at least 120 credits at levels 4, 5 and 6. You must accumulate at least 255 credits in Environmental Science (out of 360 credits overall), with at least 60 credits in each of the three years of study, to graduate with a named single honours degree in Environmental Science.
Diploma in Higher Education	240 credits	You will require at least 120 credits at level 4 or higher and at least 120 credits at level 5 or higher
Certificate in Higher Education	120 credits	You will require at least 120 credits at level 4 or higher

Environmental Science with Work Placement Year: in addition to the above students must pass a non-credit bearing module covering the placement year in order to graduate with a named degree in Environmental Science with Work Placement Year. Students who do not complete, or fail the placement year, will be transferred to the three-year Environmental Science programme.

Environmental Science with International Year: in addition to the above students must pass a module covering the international year in order to graduate with a named degree in Environmental Science with International Year. Students who do not complete, or fail the international year, will be transferred to the three-year Environmental Science programme.

10. How is the Programme assessed?

The wide variety of assessment methods used within Environmental Science at Keele reflects the broad range of knowledge and skills that are developed as you progress through the degree programme. Teaching staff pay particular attention to specifying clear assessment criteria and providing timely, regular and constructive feedback that helps to clarify things you did not understand and helps you to improve your performance. The following list is representative of the variety of assessment methods used within Environmental Science:

- **Unseen closed and open book examinations** in different formats test students' knowledge and understanding of the subject. Examinations may consist of essay, short answer and/or multiple choice questions, and paper comprehension.
- **Technical reports** require you to describe the process and progress of a scientific investigation, including engagement with and analysis of scientific data, and present this in a clear and concise format. Some technical reports may require you to make recommendations.
- **Poster presentations:** enable students to develop their communication skills and summarize the findings of their research in a clear, concise and professional format. Posters may be presented in the form of a 'conference-style' presentation session whereby students give an oral summary of their work. Posters may be completed in small groups or as individuals.
- **Oral presentations** assess individual students' subject knowledge and understanding. They also test their ability to work effectively as members of a team, to communicate what they know orally and visually, and to reflect on these processes as part of their own personal development.
- **Field Course Portfolios** document a range of activities and exercises undertaken in the field, either individually or in small groups.
- **Field Notebooks** allow you to document and record your field-based observations, including the use of field sketching, to enable you to better understand the unfamiliar field environment in which you are working in.

- **Reflective Diaries** enable you to critically reflect on your learning experiences, for example as part of a work placement experience. They are assessed on the quality of this reflection and on their ability to respond constructively to the challenges and difficulties they encounter in the process of their own creative development and learning.
- **Essays** allow you to demonstrate your ability to articulate ideas clearly using argument and reasoning skills and with close reference to the contexts and critical concepts covered in the modules. Essays also develop and demonstrate research and presentation skills (including appropriate scholarly referencing).
- **Laboratory reports** – structured proformas and full lab reports are formal summaries of work carried out in the laboratory and test students' understanding of the practical aspects of the programme and develop the skills necessary to enable students to present and analyse their results.
- **Class tests** taken either conventionally or online via the Keele Learning Environment (KLE) assess students' subject knowledge and their ability to apply it in a more structured and focused way.
- **Dissertations** enable students to explore in depth an area of particular interest through a substantial piece of focused research and writing, and test their ability to formulate and answer research questions.
- **Research projects and reports** test student's knowledge of different research methodologies and the limits and provisional nature of knowledge. They also enable students to demonstrate their ability to formulate research questions and to answer them using appropriate methods.
- **Peer assessment:** in some cases students will be involved in marking other students' work, usually with a prescriptive marking guide. This helps students to appreciate where marks are gained and lost and gives them the opportunity to see the common mistakes made by other students.
- **Reviews** of other scholars' work test students' ability to identify and summarise the key points of a text and to evaluate the quality of arguments and the evidence used to support them. In the case of work based on empirical research, reviews also assess students' knowledge of research methodologies and their ability to make critical judgements about the appropriateness of different strategies for collecting and analysing data.

There is particular emphasis on forms of assessment such as report writing and oral presentations of direct relevance to future employment avenues.

Marks are awarded for summative assessments designed to assess your achievement of learning outcomes. You will also be assessed formatively to enable you to monitor your own progress and to assist staff in identifying and addressing any specific learning needs. Feedback, including guidance on how you can improve the quality of your work, is also provided on all summative assessments within three working weeks of submission, unless there are compelling circumstances that make this impossible, and more informally in the course of tutorial and seminar discussions.

There is particular emphasis on forms of assessment such as report writing and oral presentations of direct relevance to future employment avenues. Students receive training in the different assessment types through formatively assessed exercises and feedback. Students are always provided with either oral or written (electronic) feedback that seeks both to explain the reason behind the mark awarded and to highlight areas of potential improvement. Students are always encouraged to discuss their assessed work with staff if they required additional feedback.

Details of the how assessments are specifically aligned with intended learning objectives are available within the individual module guides.

11. Contact Time and Expected Workload

This contact time measure is intended to provide you with an indication of the type of activity you are likely to undertake during this programme. The data is compiled based on module choices and learning patterns of

students on similar programmes in previous years. Every effort is made to ensure this data is a realistic representation of what you are likely to experience, but changes to programmes, teaching methods and assessment methods mean this data is representative and not specific.

Undergraduate courses at Keele contain an element of module choice; therefore, individual students will experience a different mix of contact time and assessment types dependent upon their own individual choice of modules. The figures below are an example of activities that a student may expect on your chosen course by year/stage of study. Contact time includes scheduled activities such as: lecture, seminar, tutorial, project supervision, demonstration, practical classes and labs, supervised time in labs/workshop, fieldwork and external visits. The figures are based on 1,200 hours of student effort each year for full-time students.

Activity	Year 1 (Level 4)	Year 2 (Level 5)	Placement Year	Year 3 (Level 6)
Scheduled learning and teaching activities	28%	30%	0%	15%
Guided independent Study	72%	64%	0%	85%
Placements	0%	6%	100%	0%

12. Accreditation

This subject/programme is accredited by the Institution of Environmental Sciences (IES). Students enrolled on IES accredited programmes may apply for Student Membership of the institution which provides a range of benefits: <http://www.ies-uk.org.uk>

13. Regulations

The University Regulations form the framework for learning, teaching and assessment and other aspects of the student experience. Further information about the University Regulations can be found at: <http://www.keele.ac.uk/student-agreement/>

For full details, please view the Course Regulations (Annex B).

Students should note that it is not possible to take both the Work Placement Year and International Year options.

A student who has completed a semester abroad will not normally be eligible to transfer onto the International Year option.

14. What are the typical admission requirements for the programme?

Subject	A-level	Subjects not included	International Baccalaureate	BTEC	Access to Higher Education Diploma	GCSE requirements
Environmental Science (Single Honours)	<p>ABB</p> <p>Applicants are normally expected to have at least one science subject at A-level at grade B or above. Geography, Environmental Studies and related disciplines are acceptable as science subjects. A Pass in Science Practical will be required if applicant is taking A level Biology, Chemistry or Physics (England) **</p>	General Studies and Critical Thinking	34 points to include Higher Level Biology, Chemistry, Physics or Geography at 6 or above.	<p>DDM</p> <p>You must have taken sufficient Science units, please contact us for advice</p>	Obtain Access to Higher Education Diploma with 30 Level 3 credits at Distinction. You must also have taken sufficient Science credits, please contact us for advice.	<p>Maths @ C (or 4)</p> <p>English Language @ C (or 4)</p>

	** Science practical only required from applicants taking reformed A level Biology, Chemistry or Physics in England.					
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Applicants who are not currently undertaking any formal study or who have been out of formal education for more than 3 years and are not qualified to A-level or BTEC standard may be offered entry to the University's Foundation Year Programme.

Applicants for whom English is not a first language must provide evidence of a recognised qualification in English language. The minimum score for entry to the Programme is Academic IELTS 6.0 or equivalent.

Please note: All non-native English speaking students are required to undertake a diagnostic English language assessment on arrival at Keele, to determine whether English language support may help them succeed with their studies. An English language module may be compulsory for some students during their first year at Keele.

Accreditation of Prior Learning (APL) is considered on a case-by-case basis and those interested should contact the Programme Director. The University's guidelines on this can be found here:

<http://www.keele.ac.uk/qa/accreditationofpriorlearning/>

15. How are students supported on the programme?

Personal Tutors: All students are allocated a Personal Tutor for the duration of their studies as part of the University's Personal Tutor system. The role of the Personal Tutor is to meet formally with their tutees at least once per semester to discuss progress and performance, to discuss profiling/ PDP, and to offer support and advice. In addition, to a personal tutor allocated to the student, students are encouraged to seek support from any of the Environmental Science teaching and administrative staff. Students can make arrangements to see their Personal Tutor or other staff at any time and an open door policy is operated by all current Environmental Science teaching staff so students can easily get in contact with staff either personally or via email or phone. There is very strong communication links between students and staff and a friendly and supportive environment throughout the Environmental Science programme.

Use of e-learning/the Keele Learning Environment (KLE): All modules are supported by learning materials that are accessible to students via the KLE. The School supports the University's policy on module support on the KLE.

Health and Safety: All students admitted to the programme are expected to read the Geography, Geology and Environment Safety Handbook. Students are required to sign an agreement that they have read this Handbook, and that they will abide by the rules and regulations governing the efficient working, safety and welfare of all members both within the University and in the field. The handbook can be accessed from: <http://www.keele.ac.uk/eesg/handbooks/>

Students with disabilities: Students with disabilities or medical problems, who are admitted onto the Environmental Science degree programme, will meet with a member of the University's Disability Services department, the Environmental Science Programme Director and the Geography, Geology and Environment Disability Officer where appropriate, at the very start of the course in order to discuss any special requirements.

Procedures will then be implemented according to the nature of the student's disability or medical problem. These procedures can range, for example, from allowing extra examination time for students diagnosed as dyslexic, to allocating additional staff or demonstrators to field classes to help students with mobility problems.

Careers: In addition, to the University's central Careers service there is a specific careers tutor for Geography, Geology and Environmental programmes. Students are encouraged to seek the careers tutor for any help with deciding on postgraduate programmes and funding opportunities, discussing career options, discussing option choices in relation to specific career routes, and for help and assistance in applying for jobs and placements. Within the Keele Learning Environment there is a dedicated page to careers including several subject specific careers sites.

16. Learning Resources

The School of Geography, Geology and the Environment has its own building (the William Smith Building) that contains well-equipped laboratories and lecture theatres that are used throughout the Environmental Science programme. This concentration of teaching into one building wherever possible enables students to identify with a specific base within the University. The foyer provides pleasant surroundings for students to meet and socialise with their peers. The Office is currently open during the week from 8.45am to 5.00pm to answer student queries. Teaching on specific modules takes place elsewhere in the University when there is a need for more specialised teaching facilities allowing the Environmental Science programme to benefit from a wide-range of cutting-edge teaching facilities and analytical instrumentation based elsewhere within the University. Students also have access to computing facilities within the School of Geography, Geology and the Environment.

17. Other learning opportunities

Study abroad (semester)

Students on the Environmental Science programme have the potential opportunity to spend a semester abroad in their second year studying at one of Keele's international partner universities.

Exactly which countries are available depends on the student's choice of degree subjects. An indicative list of countries is on the website (<http://www.keele.ac.uk/studyabroad/partneruniversities/>); however this does not guarantee the availability of study in a specific country as this is subject to the University's application process for studying abroad.

No additional tuition fees are payable for a single semester studying abroad but students do have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad to be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination

Whilst students are studying abroad any Student Finance eligibility will continue, where applicable students may be eligible for specific travel or disability grants. Students studying in Erasmus+ destinations may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible for income dependent bursaries at Keele.

Students travel on a comprehensive Keele University insurance plan, for which there are currently no additional charges. Some governments and/or universities require additional compulsory health coverage plans; costs for this will be advised during the application process.

Study Abroad (International Year)

A summary of the International Year, which is a potential option for students after completion of year 2 (Level 5), is provided at Annex A.

Fieldwork

Fieldwork is an essential part of an environmental scientist's training, providing both the opportunity to acquire and practice field-based skills, to develop skills of observation and recording and to work as effective members of a team. Keele is ideally located to be able to integrate a large component of field work into its environmental science programmes with a wide range of habitats in easy reach, including the Keele campus itself with its lake system and extensive woodlands, in addition to the mining and industrial heritage of the local area providing ideal opportunities for the study of the impact of these activities on the environment. The choice between an overseas or UK-based residential field course in the second year provides the opportunities to investigate environmental science and management issues and environmental change within an unfamiliar environment.

18. Additional costs

Environmental Science - Field Course Costs

All students will do mandatory field courses as part of their degree programme. There is a range of field courses and costs are dependent on degree route and the nature of the independent project work taken by students.

The University provides significant financial support for the compulsory fieldwork elements of the degree programme and the costs of travel and accommodation for compulsory field courses are fully paid for by the University up to and including Year 2.

ALL Environmental Science students undertake an independent research project in their final year, which MAY include fieldwork. Students are responsible for organising their own transport and accommodation as well as paying any costs incurred whilst carrying out fieldwork. These costs are extremely variable as they are dependent on where the student carries out their project. Costs are minimal if the project work is undertaken in the students' local area.

IMPORTANT: Students are expected to have adequate clothing for field trips. We reserve the right to change the venues of field courses due to both cost and academic considerations. Some field courses are fully or partly catered for. Others are self-catered and students are expected to purchase meals (e.g. lunch and/or evening meal).

NB: as detailed in the Course Regulations (Annex B), should you be required to retake the Introductory Environmental Chemistry module you will be charged additional fees.

These costs have been forecast by the University as accurately as possible but may be subject to change as a result of factors outside of our control (for example, increase in costs for external services). Forecast costs are reviewed on an annual basis to ensure they remain representative. Where additional costs are in direct control of the University we will ensure increases do not exceed 5%.

As to be expected there will be additional costs for inter-library loans and potential overdue library fines, print and graduation.

Activity	Estimated cost
Field courses – compulsory	£0
Field courses – optional	£0
Equipment – waterproof clothing and footwear for field courses	£100
Total estimated additional costs	£100

19. Quality management and enhancement

The quality and standards of learning in Environmental Science are subject to a continuous process of monitoring, review and enhancement.

- The Learning and Teaching Committee of the School of Geography, Geology and the Environment is responsible for reviewing and monitoring quality management and enhancement procedures and activities across the School.
- Individual modules and the Environmental Science Programme as a whole are reviewed and enhanced every year in the annual programme review which takes place at the end of the academic year and as part of the University's Curriculum Annual Review and Development (CARD) process.
- The programmes are run in accordance with the University's Quality Assurance procedures and are subject to periodic reviews under the Internal Quality Audit (IQA) process.

Student evaluation of, and feedback on, the quality of learning on every Environmental Science module takes place every year using a variety of different methods:

- The results of student evaluations of all modules are reported to module leaders and reviewed by the Programme Committee as part of the Curriculum Annual Review and Development (CARD) process.
- Findings related to the Environmental Science Programmes from the annual National Student Survey (NSS), and from regular surveys of the student experience conducted by the University, are subjected to careful analysis and a planned response at programme and School level.
- Feedback received from representatives of students in all three years of the Environmental Science Programme is considered and acted on at regular meetings of the Programmes Staff/Student Liaison Committee.

The University appoints senior members of academic staff from other universities to act as external examiners on all programmes. They are responsible for:

- Approving examination questions
- Confirming all marks which contribute to a student's degree
- Reviewing and giving advice on the structure and content of the Programme and assessment procedures

Information about current external examiner(s) can be found here:

<http://www.keele.ac.uk/ga/externalexaminers/currentexternalexaminers/>

20. The principles of programme design

The Environmental Science Programme described in this document have been drawn up with reference to, and in accordance with the guidance set out in, the following documents:

- UK Quality Code for Higher Education, Quality Assurance Agency for Higher Education: <http://www.qaa.ac.uk/assuring-standards-and-quality/the-quality-code>
- QAA Subject Benchmark Statement: Earth Sciences, Environmental Sciences and Environmental Studies (2014): <http://www.qaa.ac.uk/en/Publications/Documents/SBS-earth-sciences-14.pdf>
- Keele University Regulations and Guidance for Students and Staff: <http://www.keele.ac.uk/regulations>

21. Document Version History

Version history	Date	Notes
Date first created	October 2016	
Revision history	V2.0: 05/2017	Restructuring of year 2 to include a new 30-credit module, which is based around field and research skills development and address a lack of both qualitative and quantitative research methods. [Major change: reissued]
	V3.0: 03/2018	Minor updates to field courses
Date approved	17 March 2017	

Annex A

BSc (Hons) Environmental Science with International Year

International Year Programme

Students registered for Single Honours Environmental Science may either be admitted for or apply to transfer during their period of study at Level 5 to the Single Honours 'Environmental Science with International Year'. Students accepted onto this programme will have an extra year of study (the International Year) at an international partner institution after they have completed Year 2 (Level 5) at Keele.

Students who successfully complete both the second year (Level 5) and the International Year will be permitted to progress to Level 6. Students who fail to satisfy the examiners in respect of the International Year will normally revert to the BSc (Hons) Environmental Science and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript.

Study at Level 4, Level 5 and Level 6 will be as per the main body of this document. The additional detail contained in this annex will pertain solely to students registered for 'BSc (Hons) Environmental Science with International Year'.

NB: this programme is not available to students registered for BSc Environmental Science with work placement year (4-year) programme.

International Year Programme Aims

In addition to the programme aims specified in the main body of this document, the international year programme of study aims to provide students with:

1. Personal development as a student and a researcher with an appreciation of the international dimension of their subject
2. Experience of a different culture, academically, professionally and socially

Entry Requirements for the International Year

Students may apply to the 4-year programme during Level 5. Admission to the International Year is subject to successful application, interview and references from appropriate staff.

The criteria to be applied are:

- Academic Performance (an average of 60% across all modules at Level 5 is normally required)
- General Aptitude (to be demonstrated by application for study abroad, interview during the 2nd semester of year 2 (Level 5), and by recommendation of the student's personal tutor, 1st and 2nd year tutors and programme director)

Student Support

Students will be supported whilst on the International Year via the following methods:

- Phone or Skype conversations with Study Abroad tutor, in line with recommended Personal Tutoring meeting points.
- Support from the University's Global Education Team

Learning Outcomes

In addition to the learning outcomes specified in the main text of the Programme Specification, students who complete a Keele undergraduate programme with International Year will be able to:

- a. Describe, discuss and reflect upon the cultural and international differences and similarities of different learning environments

- b. Discuss the benefits and challenges of global citizenship and internationalisation
- c. Explain how their perspective on their academic discipline has been influenced by locating it within an international setting.

In addition, students who complete BSc (Hons) Environmental Science with International Year' will be able to:

- i) apply their experiences abroad to the specific Graduate Attributes associated with their Environmental Science degree programme;
- ii) integrate, apply and develop fundamental environmental science principles to describe and explain phenomena and solve problems in the context of selected topics within contemporary Environmental Science.

These learning outcomes will all be assessed by the submission of a satisfactory individual learning agreement, the successful completion of assessments at the partner institution and the submission of the reflective portfolio element of the international year module.

Course Regulations

Students registered for the 'BSc (Hons) Environmental Science with International Year' are subject to the course specific regulations (if any) and the University regulations. In addition, during the International Year, the following regulations will apply:

Students undertaking the International Year must complete 120 credits, which must comprise at least 40% in the student's discipline area.

This may impact on your choice of modules to study, for example you will have to choose certain modules to ensure you have the discipline specific credits required.

Students are barred from studying any Environmental Science module with significant overlap to Level 6 modules to be studied on their return. Significant overlap with Level 5 modules previously studied should also be avoided.

Additional costs for the International Year

Tuition fees for students on the International Year will be charged at 15% of the annual tuition fees for that year of study, as set out in Section 1. The International Year can be included in your Student Finance allocation, to find out more about your personal eligibility see: www.gov.uk

Students will have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination.

Students studying in Erasmus+ destinations may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible income dependent bursaries at Keele.

Students travel on a comprehensive Keele University insurance plan, for which there are currently no additional charges. Some Governments and/or universities require additional compulsory health coverage plans; costs for this will be advised during the application process.

Annex B: BSc Environmental Science Course Regulations

BSc Environmental Science (SH)

BSc Environmental Science with work placement year (SH)

These regulations supplement the relevant University Academic Regulations which are to be found on the University website and in the University Calendar. In the event of a contradiction or other discrepancy between these regulations and University Academic Regulations, the University Academic Regulations shall be authoritative, unless approval has been given by Senate for a variation from the University Academic Regulations.

1. Attendance Requirements

Students are required to attend all practical classes, tutorials, seminars, field courses and lectures. Attendance at all these sessions is monitored and checked by the academic support staff. Any absences due to extenuating circumstances should be notified as soon as possible to the School Office who will then pass on this information to tutors, as necessary. Any extenuating circumstances must be notified using the appropriate form following University regulations. Students who display a poor attendance record for no good reason are likely to be subject to disciplinary action. In addition, when taking modules from subjects other than those in the School of Geography, Geology and the Environment students must inform themselves of, and abide by, any additional attendance and notification requirements of that particular School.

Self-certification of illness as a reason for absence from compulsory classes will be accepted for no more than three occasions per Semester. Any subsequent absence for reasons of illness must be accompanied by a doctor's note.

Individual modules within the Environmental Science programmes have specific attendance regulations:

Life Science (LSC) module attendance

Attendance at practical classes, tutorials and seminars is compulsory in the School of Life Sciences. Registers will be taken at all compulsory sessions. It is the student's responsibility to ensure that they are recorded on the register as present. The office should be contacted by telephone on (01782) 733028 or (01782) 733677 or by e-mail at lifesci-office@keele.ac.uk as soon as possible to report an absence.

Failure to attend one compulsory session without good cause will result in an informal warning letter from the year tutor. Failure to attend any subsequent sessions without good cause will lead to the issuing of a formal warning from the Head of School. A maximum of two formal warnings will be issued and a fourth absence will result in a 3rd and final warning from the Director of Academic Services, which could result in the requirement to **withdraw** from the University.

The following School (Life Sciences) regulations will also apply:

- A student who is absent without good cause from 50% or more of the compulsory sessions in any module may be deemed to have failed the module.
- Self-certification of illness as a reason for absence from compulsory classes will be accepted for no more than two classes per module. Any subsequent absence for reasons of illness must be accompanied by a doctor's note.

Chemical Science (CHE) module attendance

Attendance at practical sessions is compulsory. **You cannot pass Introductory Environmental Chemistry unless you gain a mark of at least 40% for the practical component of the module.** Unsatisfactory attendance will result in automatic failure of the module. Students who fail Introductory Environmental Chemistry will need to re-take the module the following academic year and will be **charged additional fees** to do so. You must arrive in

good time for the commencement of laboratory sessions at 2 pm and may only leave prior to 5 pm with the express permission of the academic staff member in charge of the laboratory.

2. Regulations governing fieldwork

A Safety Handbook is issued to every undergraduate in the School of Geography, Geology and the Environment at registration in Year 1. Students are required to sign an agreement that they have read the Safety Handbook, and that they will abide by the rules and regulations governing the efficient working, safety and welfare of all members both within the School and in the field

Students are required to follow all instructions provided by course staff within the Safety and Field Course Handbooks and in person in the field. This includes instructions given by postgraduate demonstrators. Students must make staff aware of any pre-existing medical conditions or other issues that may be relevant to field course safety prior to attending the field course.

Students, who by thoughtless actions or rowdy behaviour put the course, other students and the reputation of the University in jeopardy, will be immediately sent home to face disciplinary procedures by the University. Additionally, they will be required to attend the next scheduled field course as a re-assessment and at their own expense. Examples of serious misconduct include: wilful damage to property, injury to persons, ingestion of alcohol or illegal substances in the field so as to endanger themselves or other members of the course, improper use of safety equipment and/or failure to attend commitments.

3. Form and submission of in course assessments:

The form and submission of coursework are determined by module leaders and announced in module documentation. Unless otherwise stated, work should be word processed. Students must familiarise themselves with the module documentation for information about how specific coursework assessments should be submitted. When taking modules from subjects other than those from within Geography, Geology and the Environment, students must inform themselves of, and abide by, the assessment and submission requirements of that School.

In the absence of agreed extenuating circumstances, work submitted late but within one week of the deadline will be marked to a maximum of 40%. Work submitted more than one week late will be given a mark of zero. Requests for extensions to deadlines should be made to the relevant module tutor and the Programme Director in advance of the coursework deadline using the University's extenuating circumstances form.

Marks indicated on returned work are provisional and subject to change until ratified by the appropriate examination board. Although marked assignments are returned to students to provide feedback, any work that counts towards the final degree result has to be made available for consultation by the External Examiner at the end of the programme. Students must be in a position to be able to resubmit work in good condition when required by the School.

4. Re-assessment and alternative assessment of missed work

Reassessment, or alternative work to replace a missed assessment supported by extenuating circumstances, may sometimes take a different form from the original assessment where it is not feasible to recreate the original circumstances of assessment, for example in the case of fieldwork, group work or peer-assessed activities. Appropriate alternative assessments may be substituted in these situations. Where fieldwork is missed and supported by extenuating circumstances where appropriate students may be given the option of taking the field course the following year or completing alternative assessment.

5. Payment of field course fees

Fieldwork is a compulsory part of the Environmental Science degree programme and forms components of assessed modules. The University provides significant financial support for the compulsory fieldwork elements of the degree programme and the costs of travel and accommodation for compulsory field courses are fully paid for by the University up to and including Year 2.

ALL Environmental Science students undertake an independent research project in their final year, which MAY include fieldwork. Students are responsible for organising their own transport and accommodation as well as paying any costs incurred whilst carrying out fieldwork. These costs are extremely variable as they are dependent on where the student carries out their project. Costs are minimal if the project work is undertaken in the students' local area.

6. Requirements governing Study Abroad

Students spending a semester abroad in year two must agree a programme of study with the Study Abroad tutor before they leave, and must agree any changes that become necessary. They should study an equivalent number of credits to that which they would have studied at Keele. They must submit a portfolio of work on their return. Marks will be converted into their Keele equivalents according to the agreement between Keele and the partner universities.

7. Regulations governing the 4-year 'with work placement' degree programme

Students have the opportunity to apply directly for the 4-year 'with work placement year' degree programme, or to transfer onto the 4-year degree programme at the end of Year-1 and in Year-2 at the end of Semester 1. Students who are initially registered for the 4-year degree programme may transfer onto the 3-year degree programme at any point in time, prior to undertaking the year-long work placement. Students who fail to pass the work placement year, and those who fail to meet the minimum requirements of the work placement year module (minimum 30 weeks full time (1050 hours), or equivalent, work placement), will be automatically transferred onto the 3-year degree programme.

Students opting to undertake the work placement year are strongly encouraged to take the existing Year-2 optional Work Placement module to help prepare for their work experience.

To be eligible for the work placement year, students must have a good University attendance record and be in 'good academic standing'. They must also have passed all Year-1 and Year-2 Semester 1 modules with an overall module average of > 55%. If a student chooses to start their work placement prior to the August of their placement year, then the student MUST ensure that they negotiate time off to attend any relevant field courses. Failure to attend field-courses due to a work placement position will not be considered as extenuating circumstances.

Students undertaking work placements will be expected to complete a Health and Safety checklist prior to commencing their work experience and will be required to satisfy the Health and Safety regulations of the company or organisation at which they are based.