



**The University of Edinburgh  
School of GeoSciences**

**BSc Honours in Ecological and Environmental  
Sciences**

**&**

**BSc Honours in Ecological and Environmental  
Sciences with Management**

**Years 1 and 2 – Pre-Honours**

**2017/18 Course Information**

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## Introduction

This handbook describes the courses taught in the first and second years of the BSc Honours in Ecological and Environmental Sciences and BSc Honours in Ecological and Environmental Sciences with Management Honours Degree programmes. A synopsis of each individual course is given in this handbook, which also includes details of timetables for each course, the number of credits you are expected to achieve in years 1 and 2 of your degree programme and information about the learning outcomes for each course. You should read and understand this information well before meeting with your Personal Tutor.

The details contained in the handbook are correct at the time of publishing. If you have any queries about the information here, then the most authoritative source of information on either of our Degrees is the 'Degree Programme Table' (DPT).

For Ecological and Environmental Sciences the web link is: <http://www.drps.ed.ac.uk/17-18/dpt/utbscecole1f.htm>

For Ecological and Environmental Sciences With Management, the URL is: <http://www.drps.ed.ac.uk/17-18/dpt/utbscecolm1f.htm>

We have also included the DPTs at the end of this booklet for your convenience.

There are other opportunities for learning of course, outside the formal courses described here. Please consider getting involved in EcoSoc (it needs reviving!) and our student-led Community BEEs (which some of you know about already: <https://communitybees.wordpress.com>). Look out for opportunities to learn about coding and data analysis in our 'Coders Club' too!

I'd also like to make a plea for you to become a student rep since they play such a vital role in our academic community. All years have student representatives. Student reps collect feedback from students on each course and feed this back to academic staff through our Staff Student Liaison Committee – and as a staff, we most definitely pay attention to this and act upon your feedback. I strongly encourage students to volunteer as Student Reps, know who their rep is and provide them with constructive feedback on courses. 'We learn together'.

Professor John Moncrieff  
Degree Programme Convenor *for*  
BSc Ecological and Environmental Sciences (and with Management)

## Ecological and Environmental Sciences Years 1 and 2

First and second year students studying a degree in Ecological and Environmental Sciences will spend the 'pre-honours' years developing a broad understanding of Ecology, Biology and Environment through a combination of classwork, practical and field study.

Year 1 of the degree programme is based around TWO compulsory courses delivered by the School of Biological Sciences: Origin and Diversity of Life 1 and Biology, Ecology and Environment 1. These courses aim to introduce you to theoretical and practical thinking about the origins and diversity of living organisms and increase your understanding of biological processes. The compulsory courses are supplemented by optional courses, which can be delivered in the College of Science and Engineering or the College of Humanities and Social Sciences. A list of popular options courses is given in later sections of this handbook. Students with secondary-school Maths grades at or lower than a D at A-level, or C at Higher, are **required** to take the Quantitative Skills for Biologists 1 course.

In the second year of your degree, you will study four Ecology and Environmental Sciences courses delivered by the School of GeoSciences which will develop a broad knowledge of the defining principles of ecology and near-surface processes involving gases, water and nutrients. These include taught as well as field-based components where you will learn how to apply a range of routine professional techniques employed in the study of biological organisms and systems in the field. As in the first year, the compulsory courses will be accompanied by optional courses in the College of Science and Engineering or the College of Humanities and Social Sciences.

## Ecological and Environmental Sciences with Management Years 1 and 2

The 'pre-honours' years of the Ecological and Environmental Sciences with Management degree broadly follow the same path as the Ecological and Environmental Sciences degree. However, the science-based courses are underpinned by compulsory management courses delivered by the Business School, the School of Economics and the School of Engineering.

In the first year, you will study the same Biological Science courses as students on the Ecological and Environmental Sciences degree, however, you will also study a further TWO compulsory courses; Industrial Management 1 and Techniques of Management. In addition to the FOUR compulsory courses, you will also be required to choose optional courses from the School of GeoSciences or other Schools in the University.

The FOUR compulsory courses in the second year of the Ecological and Environmental Sciences with Management degree are exactly the same as the Ecological and Environmental Sciences degree programme. However, in addition, you **must** choose at least 20 credits of optional courses from the Business School or the School of Economics.

## Assessment

In both of our Ecological and Environmental Sciences degree programmes, you will be assessed through a combination of continuous assessment and examinations. We advise that students of both degrees should divide their study time evenly across the year and study the same amount of credits in semesters 1 and 2 in both pre-honours years.

## Your course choices

In your first two years of study, you will be required to take and pass 240 credits of courses (120 credits in each year).

In the first year of the BSc Ecological and Environmental Sciences degree, you must complete 40 credits of compulsory science courses and 80 credits of optional courses. Students with Maths grades at or lower than a D at A-level or C at Higher are **required** to take the Quantitative Skills for Biologists course, which is worth 20 credits.

First year students on the BSc Ecological and Environmental Sciences with Management degree will study 80 credits of compulsory courses and only 40 credits of options courses. The compulsory courses comprise 40 credits of management courses, in addition to the same 40 credits of science courses as BSc Ecological and Environmental Sciences students.

Students in both programmes will study the same 80 credits of compulsory courses in second year and will both also be required to study 40 credits of options courses. BSc Ecological and Environmental Sciences students are able to choose options from across the University, however, BSc Ecological and Environmental Sciences with Management students must choose 20 credits of options from courses delivered by either the School of Economics or the Business School.

We advise that you try to spread the weight of your options courses evenly across both semesters. Details of optional courses available are found on page 15 of this guide.

## Course summary

The table below contains brief details of each course in the BSc Ecological and Environmental Sciences and BSc Ecological and Environmental Sciences with Management Years 1 and 2 degree programme tables. Further details of each course are found later in this guide.

### BSc Ecological and Environmental Sciences Compulsory courses

Course Code	Course Title	Course Organiser	Course Secretary	Sem	Year	Credits
BILG08001	Origin and Diversity of Life	Prof Jonathan Silvertown	Mrs Claire Black	1	1	20
BILG08019*	Quantitative Skills for Biologists 1	Dr Ramon Grima	Mr Edward Lithgow	1	1	20
BILG08017	Biology, Ecology and Environment 1	Dr Patrick Walsh	Mrs Claire Black	2	1	20
ECSC08003	Soil, Water and Atmospheric Processes	Prof John Moncrieff	Miss Eilein Fraser	2	2	20
ECSC08006	Principles of Ecology	Prof Murray Roberts	Miss Eilein Fraser	1	2	20
ECSC08007**	Field Ecology	Prof Matthew Bell	Miss Eilein Fraser	-	2	20
ECSC08008	Ecological and Environmental Analysis	Dr Saran Sohi	Miss Eilein Fraser	2	2	20

\*Students with Maths grades at or lower than a D at A-level or C at Higher are required to take BILG08019.

\*\*runs in May/June at the end of year 1

### BSc Ecological and Environmental Sciences with Management Compulsory courses\*\*

Course Code	Course Title	Course Organiser	Course Secretary	Sem	Year	Credits
BILG08001	Origin and Diversity of Life	Prof Jonathan Silvertown	Mrs Claire Black	1	1	20
BILG08017	Biology, Ecology and Environment 1	Dr Patrick Walsh	Mrs Claire Black	2	1	20
BUST08002	Industrial Management 1	Dr Joosung Lee	Miss Carry Arnold	1	1	20
MAEE08002	Techniques of Management	Mr Stephen Warrington	Miss Lucy Davie	2	1	20
ECSC08003	Soil, Water and Atmospheric Processes	Prof John Moncrieff	Miss Eilein Fraser	2	2	20
ECSC08006	Principles of Ecology	Prof Murray Roberts	Miss Eilein Fraser	1	2	20
ECSC08007*	Field Ecology	Prof Matthew Bell	Miss Eilein Fraser	-	2	20
ECSC08008	Ecological and Environmental Analysis	Dr Saran Sohi	Miss Eilein Fraser	2	2	20

\*runs in May/June at the end of year 1

\*\* PLUS 20 credits from the School of Economics or Business School

Contact details for Course Organisers and Course Secretaries are included in the detailed descriptions of each course, found later in this guide.

## Key Dates

The table below details key University and School dates throughout the 2017/18 academic year. These dates are correct at the time of publishing and may be subject to change.

### 2017

11 <sup>th</sup> – 15 <sup>th</sup> September	Welcome Week ( <a href="http://www.ed.ac.uk/students/new-students/events">http://www.ed.ac.uk/students/new-students/events</a> )
12 <sup>th</sup> September	Welcome talk (9:45 – 11:30)
18 <sup>th</sup> September	Start of Teaching Block 1
11 <sup>th</sup> October	Student/Staff Liaison Committee Meeting
20 <sup>th</sup> October	End of Teaching Block 1
23 <sup>rd</sup> October	Start of Teaching Block 2
TBC	Winter Exam diet timetable published
9 <sup>th</sup> November	Student Staff Liaison Committee meeting
1 <sup>st</sup> December	End of Teaching Block 2
4 <sup>th</sup> – 8 <sup>th</sup> December	Revision
11 <sup>th</sup> December	Examinations start
21 <sup>st</sup> December	End of Semester 1/End of Examinations

### 2018

13 <sup>th</sup> January	Winter Teaching Vacation ends
15 <sup>th</sup> January	Start of Teaching Block 3
7 <sup>th</sup> February	Student/Staff Liaison Meeting
16 <sup>th</sup> February	End of Teaching Block 3
20 <sup>th</sup> – 24 <sup>th</sup> February	Flexible Learning Week
26 <sup>th</sup> February	Start of Teaching Block 4
7 <sup>th</sup> March	Student/Staff Liaison Committee Meeting
6 <sup>th</sup> April	End of Teaching Block 4
TBC	Spring Exam diet timetable published
9 <sup>th</sup> April	Spring Teaching Vacation starts
20 <sup>th</sup> April	Spring Teaching Vacation ends
23 <sup>rd</sup> – 27 <sup>th</sup> April	Revision week
30 <sup>th</sup> April	Examinations start
25 <sup>th</sup> May	End of Semester 2/End of Examinations
28 <sup>th</sup> May – 7 <sup>th</sup> June	Field Ecology course
29 <sup>th</sup> May	Summer Teaching Vacation starts
TBC	School of GeoSciences graduation ceremony

Course submission deadlines can be viewed on the Teaching Organisation Deadline Diary at <http://www.ed.ac.uk/schools-departments/geosciences/teaching-organisation/to-overview>

## Course Information

### ECSC08003 Soil, Water and Atmospheric Processes

<b>Course Organiser:</b>	Prof John Moncrieff	<b>Other Key Staff:</b>	Prof Kate Heal, Dr Saran Sohi
<b>Course Secretary:</b>	Eilein Fraser	<b>Course location:</b>	Kings Buildings
<b>Credits available:</b>	20	<b>SCQF Level:</b>	08

#### Course description

The study of the near-surface processes that underpin the exchange of gases, water and nutrients at the scale of the organism to the landscape. This course provides a background in soil science, environmental physics and hydrology required to tackle issues such as land degradation, climate and land use change and microclimate modification.

2017/18 course syllabus

Week 1: Introduction to SWAP

Weeks 1-2: System Inputs

Week 2: Case Study 1

Weeks 3-6: Internal System Dynamics

Weeks 7-9: System Outputs

Week 10: Case Study 2

Week 11: Conclusions and revision

#### Further Course Information

[https://path.is.ed.ac.uk/courses/ECSC08003\\_SV1\\_SEM2](https://path.is.ed.ac.uk/courses/ECSC08003_SV1_SEM2)

<http://www.drps.ed.ac.uk/17-18/dpt/cxecsc08003.htm>

#### Learning Outcomes

By the end of the course, students will have developed a broad knowledge of the connected near-surface processes that underpin gas, water and nutrient exchange at the scale of the organism to the landscape. Students will gain an understanding of soil science, environmental physics and hydrology which will enable them to tackle professional issues such as land degradation, climate and land use change and microclimate modification by following routine lines of enquiry. Students will be expected to be able to explain how microclimate can be modified, the factors affecting the drainage of a soil, how rainfall reaches river channels and explain the role of soil organic matter in soil fertility and structure

- Display a range of routine skills such as:
  - Carrying out soil and water quality surveys
  - Constructing a water balance for a catchment and showing how it is affected by a change in land use
  - Constructing an energy balance for a range of surfaces
  - Calculating return periods for extreme events such as floods and drought
- Appreciate the interaction between surface water and groundwater in the catchment hydrological cycle
- Understand how distinct soil horizons and soil series develop under the influence of factors such as parent material, topography and climate
- Discuss the principles of energy exchange in organisms
- Understand the errors involved in measurements of soil, water and meteorological properties
- Discuss the factors (including pH and CEC) affecting the availability and the fixation of essential nutrients and potentially toxic elements in soil
- Critically analyse some of the main concepts associated with the functioning of the soil, water and the atmospheric systems.



### **Opportunities for feedback**

Students will receive formative feedback from Teaching Assistants following the tutorials. Verbal feedback will be given during weekly practical classes. Feedback will be given on summative assessment at the end of the course and all students will be invited to an examination feedback session following release of course results. Examples of feedback can be found here: <http://www.ed.ac.uk/schools-departments/geosciences/teaching-organisation/staff/feedback-and-marking>

### **Assessment details**

Written Exam: 70%, Course Work: 30 %, Practical Exam: 0%.

The Degree Exam in June will cover theory and practical aspects of the course. Three Practical exercises and three Tutorials comprise the coursework along with one class test; three summative assessments each worth 10% of the total mark available for the whole course will be drawn from the tutorial and practical exercises. Please note that there are no assessed attendance requirements on this course.

### **Assessment deadlines**

See Handbook discussed at Lecture 1 at the start of the course; available online through Learn.

### **Assessment and Feedback information**

<http://www.docs.sasg.ed.ac.uk/academic-services/regulations/taught-assessment-regulations.pdf>. All details related to extensions procedures and late penalties can be found in the School of GeoSciences General Information Handbook 2017-18

### **Pre-requisite courses**

NONE

#### **Timetable**

Semester:	Semester 2
Lectures:	M T T 16.10-17.00
Practical class:	M 9.00-10.50, W 14.10-16.00
Tutorial:	M T T 16.10-17.00

[https://browser.ted.is.ed.ac.uk/generate?courses\[\]=ECSC08003\\_SV1\\_SEM2&show-close=1&no-timeframe-change=1&period=SEM2](https://browser.ted.is.ed.ac.uk/generate?courses[]=ECSC08003_SV1_SEM2&show-close=1&no-timeframe-change=1&period=SEM2)

### **Recommended reading**

- Rose, C.W. (2004) An Introduction to the Environmental Physics of Soil, Water and Watersheds, Cambridge University Press, Cambridge.

Although this textbook is the closest fit to the course content it does not cover all aspects of the course material. You will therefore need to consult the textbooks listed below. Many textbooks are in the Reserve sections of University libraries; if there are any difficulties in obtaining these books, please let the Course Organiser know.

- Oke, T.R. (1987) Boundary Layer Climates. 2nd Ed. Routledge. ISBN 0415043190 (the best textbook for the Atmosphere section of the course)

- Ashman, M. R. and Puri G. (2002) Essential soil science: a clear and concise introduction to soil science. Blackwell Scientific, Oxford. (A good basic textbook, suitable for this course but not for more advanced environmental science study).

- Brady, N. C. and Weil, R. R. (2008) The Nature and Properties of Soils (14th Ed). Pearson Education. (The latest edition of the classic soil textbook which goes beyond this course and will stand you in good stead for most undergraduate soil science).

- Ward, R.C. and Robinson, M. (1999). Principles of Hydrology (4th Ed). McGraw - Hill. (Well-respected hydrology textbook with good coverage of hydrological processes. Will stand you in good stead for most undergraduate hydrology. The 3rd Ed is also suitable).

- Davie, T. (2002) Fundamentals of Hydrology. Routledge. (A good basic textbook, cheaper to buy than Ward and Robinson).

Please see the course handbook for information about supplementary reading and further information about readings for each lecture.

[http://www.docs.sasg.ed.ac.uk/AcademicServices/Policies/Accessible\\_and\\_Inclusive\\_Learning\\_Policy.pdf](http://www.docs.sasg.ed.ac.uk/AcademicServices/Policies/Accessible_and_Inclusive_Learning_Policy.pdf)

**Contacts**

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## ECSC08006 Principles of Ecology

<b>Course Organiser:</b>	Prof Murray Roberts	<b>Other Key Staff:</b>	Drs Gail Jackson, Isla Myers-Smith, Lea-Anne Henry , Chris Ellis, Matt Bell, Josephine Pemberton
<b>Course Secretary:</b>	Eilein Fraser	<b>Course location:</b>	Kings Buildings
<b>Credits available:</b>	20	<b>SCQF Level:</b>	08

### Course description

An introduction to the factors determining the distribution and patterns of abundance of organisms, and which relate plant and animal populations to their environment in both terrestrial and marine environments. It includes the physiological ecology of plants and animals, the life history strategies by which organisms adapt to their environments, trophic ecology and the ecological significance of the niche, biodiversity and co-existence. The importance of evolutionary history and succession for understanding patterns of distribution will also be emphasised. The course includes an introduction to marine ecology and ecosystems. Finally a section concerning the influence of the human species on ecosystems will be presented. A practical project report must be submitted as part of the course. The course will include basic statistical methods training.

### Further Course Information

[https://path.is.ed.ac.uk/courses/ECSC08006\\_SV1\\_SEM1](https://path.is.ed.ac.uk/courses/ECSC08006_SV1_SEM1)

<http://www.drps.ed.ac.uk/16-17/dpt/cxecsc08006.htm>

### Learning Outcomes

On completion of this course, the student will be able to:

1. demonstrate a broad knowledge of the defining principles of ecology and understand the factors controlling the abundance and distribution of organisms globally.
2. understand and use introductory statistics; hypothesis testing, basic experimental design and field sampling.
3. demonstrate a broad knowledge of the ecological theory explaining patterns of spatial and temporal variations in species numbers in both terrestrial and marine environments.
4. carry out a scientific research project related to an ecological question: formulate clear, precise and potentially answerable questions, collect unbiased data and test hypotheses.
5. communicate by means of an oral presentation and a written scientific research report the basis of their research findings and through this critically analyse mainstream concepts within Ecological Science.

### Opportunities for feedback

Students will receive formative feedback from the Dr Gail Jackson, Prof J Murray Roberts and practical demonstrators on their hypotheses and experimental design for a six week group practical field project. This will take the form of a personalised one page sheet addressing specific issues relevant to each group's project proposals. As projects proceed students will receive weekly feedback from laboratory demonstrators and where necessary Dr Gail Jackson and Prof J Murray Roberts. Students will receive formative feedback from the course statistics lecturer, Prof Josephine Pemberton concerning the proposed statistical analysis of their project data. Formative feedback will be received following a group oral presentation of the project work. This feedback will immediately follow the presentations and will take the form of written peer assessment and oral suggestions from the Dr Gail Jackson, Prof J Murray Roberts and project demonstrators. Project reports will receive a written half page sheet of summative feedback from project demonstrators. Feedback will be given on summative assessment at the end of the course and all students will be invited to an examination feedback session following release of course results. Examples of feedback can be found here:

<http://www.ed.ac.uk/schools-departments/geosciences/teaching-organisation/staff/feedback-and-marking>

### Assessment details

Written Exam: 67%, Course Work: 33 %, Practical Exam: 0%.

The exam in the December diet will cover the theoretical and statistical aspects of the course. The course work assessment takes the form of the field project report.

### **Assessment deadlines**

The project report deadline: Wednesday November 29<sup>th</sup> 2017 at 10am.

### **Assessment and Feedback information**

<http://www.ed.ac.uk/files/atoms/files/taughtassessmentregulations.pdf> All details related to extensions procedures and late penalties can be found in the School of GeoSciences General Information Handbook 2017-18

### **Pre-requisite courses**

Recommended: Biology, Ecology and Environment.

### **Timetable**

Semester: Semester 1  
Lectures: Monday 0900-0950, Thursday 1000-1050, Friday 1310-1400  
Practical class: Wednesday, 10:00-13:00

[https://browser.ted.is.ed.ac.uk/generate?courses\[\]=ECSC08006\\_SV1\\_SEM1&show-close=1&no-timeframe-change=1&period=SEM1](https://browser.ted.is.ed.ac.uk/generate?courses[]=ECSC08006_SV1_SEM1&show-close=1&no-timeframe-change=1&period=SEM1)

### **Syllabus**

Please see course Learn page for full syllabus

### **Recommended reading**

The following are generally useful as sources of first reference on many topics. They cost £20-35 each.

Begon, M., Townsend, C. R. & Harper, J. L. (2006). Ecology (4th edn). Blackwell Science, Oxford.  
(The recommended text for this course)

Colinvaux, P. (1993). Ecology 2. Wiley, New York.  
(Readable and very good on some aspects)

Ingrouille M. (1995). Historical Ecology of the British Flora. Chapman and Hall.

Kaiser MJ et al. (2011) Marine Ecology. Oxford University Press  
(Highly recommended for overview of marine ecology & ecosystems)

Krebs, C. J. (1994 & 2001). Ecology. (4th & 5th edns). Harper Collins, New York. (Good on animal populations)

Levinton (2010) Marine Biology. Oxford University Press  
(Good for more in-depth review of biological topics)

Ricklefs, R. E. & Miller, G. L. (1999). Ecology. (4th edn). Freeman, New York.

Townsend, C.R., Begon, M. and Harper, J.L. (2006). Essentials of Ecology (2nd Edition). Blackwell Publishing.  
(Highly recommended).

### **Contacts**

#### **Course Organiser**

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## ECSC08007 Field Ecology

<b>Course Organiser:</b>	Prof Matthew Bell	<b>Other Key Staff:</b>	Dr Christina Coakley
<b>Course Secretary:</b>	Eilein Fraser	<b>Course location:</b>	Kings Buildings
<b>Credits available:</b>	20	<b>SCQF Level:</b>	08

### Course description

NB. THIS COURSE HAS ALREADY RUN FOR 2017-18 and no students (except those who attended the course in May 2017) can be enrolled for this academic year.

This 20-point level 8 course is recommended for students intending to take Biological Sciences (Ecology). It consists of a field course plus an extended assessment. The field course takes place in May-June before the start of the academic year and the extended assessment is handed in during semester 1. The course is normally taken after the end of first year when it counts as a second year course.

Students on other programmes interested in taking the Field Ecology for 2018-19 should contact the course organiser or the course secretary before the end of February 2018 to register their interest in the 2018-19 course as additional places will be limited. The course for 2018-19 will run on from Monday 28<sup>st</sup> May - Wednesday 7<sup>th</sup> June 2018. STUDENTS MUST NOTE THEIR INTEREST WITH THE COURSE SECRETARY. THE £25 COURSE FEE MUST BE PAID BY 30th APRIL 2018 TO SECURE A PLACE.

### Further course information

[https://path.is.ed.ac.uk/courses/ECSC08007\\_SS1\\_SB5%2B](https://path.is.ed.ac.uk/courses/ECSC08007_SS1_SB5%2B)

<http://www.drps.ed.ac.uk/17-18/dpt/cxecsc08007.htm>

### Learning Outcomes

At the end of this course you should have a broad knowledge of how to apply a range of routine professional techniques employed in the study of biological organisms and ecosystems in the field. You will also gain detailed experience in methods of identification and classification of organisms. Based on this, you should be able to:

- Identify common plant species, from herbs through to trees, in a variety of Scottish habitats
- Identify invertebrates in the field to the level of order
- Systematically collect ecological data
- Make critical observations and take structured notes in the field
- Design and conduct simple surveys and field experiments in ecology

### Opportunities for feedback

Students will receive formative feedback from staff and demonstrators on their field notebooks during the first four days of the course. This will improve note taking and collecting of ecological data. The last four days of the field notebook will be marked and returned with feedback, along with plant guides, on the last day of the course. This will help students in successfully writing up their summer projects. Those projects will be returned in the autumn with detailed feedback. During the course, students are constantly with staff members and demonstrators and receiving help and feedback on identifying natural organisms and collecting ecological data.

### Assessment details

Written Exam: 0%, Course Work: 100%, Practical Exam: 0%.

**Intermittent (50%):** There are four assignments that are completed during the running of the field course: the field notebook (20%), a guide to Scottish plants (10%), a key to Scottish trees (10%), and a data analysis exercise (10%). The latter two assessments are marked after the course ends and available to students when they return to university in the autumn.

**Post-course (50%):** Students will complete an ecological project over the summer and write up the results in standard scientific format. **The report should be submitted online to Learn and also in hard copy (if containing biological collections) to the Undergraduate Secretary, Undergraduate Office, room 332, Grant Institute Building by 12 noon on the Wednesday of the second week of the first Semester.**

**Assessment deadlines**

See above

**Pre-requisite courses**

None

**Approximate schedule for field course**

Day	Location	Topic
Day 1	Hermitage of Braid	Introduction to Invertebrates, Surveying Invertebrates
Day 2	Hermitage of Braid	Further Identification of Invertebrates, Compilation and Analysis of Data
Day 3	King's Buildings	Introduction to Plants
Day 4	Roslin Glen	Trees and Their Ecology, Bird Surveys
Day 5	Roslin Glen	Understanding and Surveying Habitats
Day 6	Pentland Hills	Phase 1 Habitat Surveys, Uplands Ecology
Day 7	Pentland Hills	Freshwater Ecology and Invertebrates
Day 8	Yellowcraig Beach	Coastal Ecology and Research Design
Day 9	King's Buildings	Data Analysis Assessment, Feedback on Field Handbooks and Plant Guides

**Required books for course**

[Street, D. 2010. **Collins Flower Guide**. Harper Collins Publishers.

Or

Rose, F & O'Reilly, C. 2006. **The Wild Flower Key**. Penguin Press.

Or

Blamey, M. et al. 2013. **Wild Flowers of Britain and Ireland**. Domino Guides.

And

Clapham, A.R. et al. 1981. **Excursion Flora of the British Isles**. Cambridge University Press.

Or

Stace, C. 1999. **Field Flora of the British Isles**. Cambridge University Press.]

Or

[Stace, C. 2010. **New Flora of the British Isles**. Cambridge University Press.]

And

Chinery, M. 2012. **Insects of Britain and Western Europe**. Domino Guides.

**Other useful potentially books for course**

Hubbard, C.E. 1992. **Grasses: A Guide to Their Structure, Identification, Uses, and Distribution**. Penguin Press.

One of the innumerable bird guides on the market (Collins is good, others may be too).

**Contacts****Course Organiser**

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**Course Secretary**

Eilein Fraser

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## ECSC08008 Ecological and Environmental Analysis

<b>Course Organiser:</b>	Dr Saran Sohi	<b>Other Key Staff:</b>	Dr Kyle Dexter, Dr Craig Walling
<b>Course Secretary:</b>	Eilein Fraser	<b>Course location:</b>	Kings Buildings
<b>Credits available:</b>	20	<b>SCQF Level:</b>	08

### Course description

To understand the way that ecological and environmental systems function, we often look for associations and seek evidence of causality, or the pattern of interaction between components. We may ultimately seek to establish the nature of these relationships that we can make predictions for other systems or of future change.

Reaching robust conclusions requires collection of sound data and proper statistical interpretation. The EEA course equips students with an integrated knowledge of data collection and data analysis, for use in dissertation projects and careers beyond.

This course considers the formulation of research questions and four broad themes:

- Survey and sampling
- Relationships between variables
- Design, analysis and interpretation of controlled experiments
- Dynamic data and the principles of simulation modelling.

### Further Course Information

[https://path.is.ed.ac.uk/courses/ECSC08008\\_SV1\\_SEM1](https://path.is.ed.ac.uk/courses/ECSC08008_SV1_SEM1)

<http://www.drps.ed.ac.uk/17-18/dpt/cxecsc08008.htm>

### Learning Outcomes

On completion of this course, the student will be able to:

- define appropriate strategies for quality sampling and survey;
- explore data in ways that enable relationships to be established between different environmental and/or ecological variables;
- design, analyse and interpret controlled experiments;
- understand time series data and their use in simulation modelling;
- use current computing tools to undertake analysis.

Students will have gained an integrated knowledge and understanding of data and the key techniques used to reach robust conclusions on the function of ecological and environmental systems. The principles and use of general linear models and simulation models will have been established. Strategies for the design of formal experiments to isolate and test the significance of individual or combined factors on response variables will have been examined. You will have gained familiarity use of dedicated computing statistical software

### Opportunities for feedback

Students will receive formative feedback from Dr Saran Sohi. Feedback will be given on summative assessment at the end of the course and all students will be invited to an examination feedback session following release of course results. Examples of feedback can be found here: <http://www.ed.ac.uk/schools-departments/geosciences/teaching-organisation/staff/feedback-and-marking>

### Assessment details

Written Exam: 60%, Course Work: 40 %, Practical Exam: 0%.

The exam in the May diet will cover the theoretical and statistical aspects of the course. The course work assessment takes the form of the field project report.

Students are required to pass 40% of coursework and 40% of the exam in order to attain an overall pass for the course

### Assessment deadlines

The deadline for the **Survey proposal** is **noon on Friday 9<sup>th</sup> March 2018**.

The deadline for **Experimental design** is **noon on Friday 6<sup>th</sup> April 2018**.

### Assessment and Feedback information

<http://www.ed.ac.uk/files/atoms/files/taughtassessmentregulations.pdf> All details related to extensions procedures and late penalties can be found in the School of GeoSciences General Information Handbook 2017-18

### Pre-requisite courses

#### Timetable

		Lecture and practical sessions	Tutorials
Week (lead)	Date	<b>Mon 10:00–13:00</b> Week 1 – Swann Building, 7.20 Week 4&6 – KB Computer Lab, Level 3 Week 7&8 – Crew Annexe 4	<b>Mon 14:00–14:50</b> <u>Group 1:</u> Room 5, Crew Annexe; or <b>Wed 10:00–10:50</b> <u>Group 2:</u> 7.21, Swann Building or <u>Group 3:</u> or 6201, JCMB <b>Fri 15:10–16:00</b> <u>Group 4:</u> Room 3, Crew Annexe or <u>Group 5:</u> 4319A, (Hons 1 in weeks 6 & 8)
1* (SS)	Mon 15 Jan	Introduction to EEA and defining the question	
1	Mon/Wes/Fri 15/17/19 Jan	No tutorial	
2 (SS)	Mon 22 Jan	Collecting data – spatial heterogeneity	
2 (SS)	Mon/Wes/Fri 22/24/26 Jan		Working with dimensions and units: introduction
3 (SS)	Mon 29 Jan	Survey and indicators – error propagation	
3 (SS)	Mon/Wes/Fri 29/31 Jan, 2 Feb		Working with dimensions and units: feedback
4 (KD)	Mon 5 Feb	Statistical modelling: visualising and exploring data	



		Lecture and practical sessions	Tutorials
Week (lead)	Date	<p><b>Mon 10:00–13:00</b> Week 1 – Swann Building, 7.20 Week 4&amp;6 – KB Computer Lab, Level 3 Week 7&amp;8 – Crew Annexe 4</p>	<p><b>Mon 14:00–14:50</b> <u>Group 1:</u> Room 5, Crew Annexe; or <b>Wed 10:00–10:50</b> <u>Group 2:</u> 7.21, Swann Building or <u>Group 3:</u> or 6201, JCMB <b>Fri 15:10–16:00</b> <u>Group 4:</u> Room 3, Crew Annexe or <u>Group 5:</u> 4319A, (Hons 1 in weeks 6 &amp; 8)</p>
4 (SS)	Mon/Wes/Fri 5/7/19 Feb		Proposals, resources and constraints
5 (KD)	Mon 12 Feb	Statistical modelling: linear models	
5 (SS)	Mon/Wes/Fri 12/14/16 Feb		Stratification, allometry and other indicator measurements
19–23 <sup>rd</sup> February – Festival of Learning			
6 (KD)	Mon 26 Feb	Statistical modelling: building on linear models	
6 (SS)	Mon/Wes/Fri 26/28Feb, 2 Mar		Contextualising results
7* (CW)	Mon 5 Mar	Experimental design – general principles	
7	Mon/Wes/Fri 5/ 7/9 Mar	No tutorial	
8* (CW)	Mon 12 Mar	Experimental design – practical application	
8 (CW)	Mon/Wes/Fri 12/14/16 Mar		Appraisal of experimental designs
9 (CW)	Mon 19 Mar	Experimental design and statistical analysis	
9	Mon/Wes/Fri 19/21/23 Mar	No tutorial	
10 (SS)	Mon 26 Mar	Dynamic data and complex systems	
10	Mon/Wes/Fri 26/28/30 Mar	No tutorial	
11 (SS)	Mon 2 Apr	Introduction to simulation modelling	
11	Mon/Wes/Fri 2/4/6 Apr	Revision	

		Lecture and practical sessions	Tutorials
Week (lead)	Date	<p><b>Mon 10:00–13:00</b>  Week 1 – Swann Building, 7.20  Week 4&amp;6 – KB Computer Lab, Level 3  Week 7&amp;8 – Crew Annexe 4</p>	<p><b>Mon 14:00–14:50</b>  <u>Group 1:</u> Room 5, Crew Annexe;  or  <b>Wed 10:00–10:50</b>  <u>Group 2:</u> 7.21, Swann Building or  <u>Group 3:</u> or 6201, JCMB  <b>Fri 15:10–16:00</b>  <u>Group 4:</u> Room 3, Crew Annexe  or  <u>Group 5:</u> 4319A,  (Hons 1 in weeks 6 &amp; 8)</p>
12	Mon 9 Apr	Revision	
12	Mon/Wes/Fri 9/11/13 Apr	Revision	
13	Mon 16 Apr	Revision	
13	Mon/Wes/Fri 16/18/20 Apr	Revision	
** Exams start 1 <sup>st</sup> May **			

[https://browser.ted.is.ed.ac.uk/generate?courses\[\]=ECSC08008\\_SV1\\_SEM1&show-close=1&no-timeframe-change=1&period=SEM2](https://browser.ted.is.ed.ac.uk/generate?courses[]=ECSC08008_SV1_SEM1&show-close=1&no-timeframe-change=1&period=SEM2)

### Syllabus

Please see course Learn page for full syllabus

### Recommended reading

Will be given out 1 week prior to each session. Also check course handbook on Learn.

### Contacts

#### Course Organiser

Dr Saran Sohi

Email: [saran.sohi@ed.ac.uk](mailto:saran.sohi@ed.ac.uk)

Tel: 0131 650 5091

#### Course Secretary

Eilein Fraser

Email: [eilein.fraser@ed.ac.uk](mailto:eilein.fraser@ed.ac.uk)

Tel: 0131 650 5430

## **Other popular optional courses**

Students may choose to take other optional courses from across the School of GeoSciences, The School of Biological Sciences, The School of Economics and The Business School. Please view the relevant Degree Programme Table for details:

BSc Ecological and Environmental Sciences: <http://www.drps.ed.ac.uk/16-17/dpt/utbscecole1f.htm>

BSc Ecological and Environmental Sciences with Management: <http://www.drps.ed.ac.uk/16-17/dpt/utbscecolm1f.htm>

# Degree Programme Tables

## Ecological and Environmental Sciences (BSc Hons) (UTBSCECOLE1F)

### Year 1

#### COMPULSORY COURSES

This DPT has 2 compulsory courses.

Code	Course Name	Period	Credits
BILG08001	Origin and Diversity of Life 1	Semester 1	20
BILG08017	Biology, Ecology and Environment 1	Semester 2	20

#### COURSE OPTIONS

This DPT has 3 sets of course options with the following rules.

<p><b>Select exactly 80 credits from</b> 60 credits from Level 7 and 8 courses in Schedules A to Q, T and W, as available AND 20 credits from Level 8, during Semester 1: (BILG08019) Quantitative Skills for Biologists 1 NB: Students with Maths grades at or lower than a D at A-level or C at Higher are required to take BILG08019.</p> <p>OR</p> <p><b>Select exactly 80 credits from</b> 80 credits from Level 7 and 8 courses in Schedules A to Q, T and W, as available</p>
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### Year 2

#### COMPULSORY COURSES

This DPT has 4 compulsory courses.

Code	Course Name	Period	Credits
ECSC08006	Principles of Ecology	Semester 1	20
ECSC08003	Soil, Water and Atmospheric Processes	Semester 2	20
ECSC08007	Field Ecology Notes: The field work component of this course takes place at the end of 1 <sup>st</sup> year in late May/early June.	Blocks 5 (Sem 2) and beyond	20
ECSC08008	Ecological and Environmental Analysis	Semester 2	20

#### COURSE OPTIONS

This DPT has 1 set of course options with the following rules.

<p><b>Select exactly 40 credits from</b> Level 8 courses in Schedules A to Q, T and W, as available.</p> <p>Notes: A booklet giving details of appropriate course combinations will be given to students to facilitate advance planning.</p>
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### Year 3

#### COMPULSORY COURSES

Code	Course Name	Period	Credits
BILG09009	Population and Community Ecology 3	Semester 1	20
ECSC09004*	Ecological Measurement	Semester 1	20

#### COURSE OPTIONS

<p><b>Select exactly 40 credits from</b> Level 9 courses in Schedules A to Q, T and W, as available AND <b>Select exactly 20 credits from</b> ECSC09005 Environmental Pollution (20 credits) ECSC09002 Natural Resource Management (20 credits)</p>
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\*Please note this course starts in the summer.

**Year 4****COMPULSORY COURSES**

<b>Code</b>	<b>Course Name</b>	<b>Period</b>	<b>Credits</b>
ECSC10034	Critical Thinking in Ecological and Environmental Sciences	Full Year	10
ECSC10033	Ecological and Environmental Sciences Field Course (including management)	Semester 1	20
ECSC10030	Dissertation in Ecological and Environmental Sciences	As available	40
ECSC10032	Professional Skills in Ecological and Environmental Sciences	Semester 1	10

**COURSE OPTIONS****Select exactly 20 credits from**

Level 10 and 11 courses in Schedules A to Q, T and W, as available

AND

**Select exactly 20 credits from**

ECSC10025 Effective Project Planning and Management (10 credits)

ECSC10037 Current Issues in Ecology and Environmental Science (10 credits)

ECSC10036 Conservation Science (20 credits)

ECSC10014 Land-Atmosphere Interactions (10 credits)

# Ecological and Environmental Sciences with Management (BSc Hons) (UTBSCECOLM1F)

## Year 1

### COMPULSORY COURSES

Code	Course Name	Period	Credits
BILG08001	Origin and Diversity of Life 1	Semester 1	20
BILG08017	Biology, Ecology and Environment 1	Semester 2	20
BUST08002	Industrial Management 1	Semester 1	20
MAEE08002	Techniques of Management	Semester 2	20

### COURSE OPTIONS

**Select exactly 40 credits from**

40 credits from Level 7 and 8 courses in Schedules A to Q, T and W, as available

## Year 2

### COMPULSORY COURSES

Code	Course Name	Period	Credits
ECSC08006	Principles of Ecology	Semester 1	20
ECSC08003	Soil, Water and Atmospheric Processes	Semester 2	20
ECSC08007	Field Ecology	Blocks 4-5 (Sem 2)	20
ECSC08008	Ecological and Environmental Analysis	Semester 2	20

### COURSE OPTIONS

**Select exactly 20 credits from**

Level 8 courses in Schedules A to Q T and W, as available.

AND

**Select exactly 20 credits from**

Business Studies Level 8 courses

OR

Economics Level 8 courses

## Year 3

### COMPULSORY COURSES

Code	Course Name	Period	Credits
BILG09009	Population and Community Ecology 3	Semester 1	20
ECSC09004*	Ecological Measurement	Semester 1	20

### COURSE OPTIONS

**Select a minimum of 40 credits and maximum of 60 credits from**

Level 9 courses in Schedules A to Q, T and W, as available

AND

**Select a minimum of 20 credits and a maximum of 40 credits**

ECSC09002 Natural Resource Management (20 credits)

OR

Business Studies Level 9 and 10 courses (20 credits)

OR

Economics Level 9 and 10 courses (20 credits)

\*Please note this course starts in the summer.

## Year 4

### COMPULSORY COURSES

Code	Course Name	Period	Credits
ECSC10034	Critical Thinking in Ecological and Environmental Sciences	Full Year	10
ECSC10033	Ecological and Environmental Science Field Course	Semester 1	20
ECSC10031	Dissertation in Ecological and Environmental Sciences with Management	As available	40
ECSC10032	Professional Skills in Ecological and Environmental Sciences	Semester 1	10

COURSE OPTIONS

**Select a minimum of 10 credits and a maximum of 20 credits from**

ECSC10012 Land Use and Water Resources (10 credits)

ECSC10013 Land Use Policy (10 credits)

ECSC10025 Effective Project Planning and Management (10 credits)

OR

Economics Level 10 courses

OR

Business Studies Level 10 courses

AND

**Select a minimum of 20 credits and a maximum of 30 credits from**

Biological Sciences Level 10 courses

OR

Ecology Level 10 courses

OR

Economics Level 10 courses

OR

Business Studies Level 10 courses

\*Please note this course starts in the summer.

## Useful links

The below links are for pages which give details of policies and guidance within and outside of the School of GeoSciences, including Special Circumstances, Assessments and Examination diets.

School of GeoSciences Teaching Organisation:

<http://www.ed.ac.uk/schools-departments/geosciences/teaching-organisation>

School of GeoSciences policies and forms:

<http://www.ed.ac.uk/schools-departments/geosciences/teaching-organisation/to-form-policy>

College of Science and Engineering:

<http://www.ed.ac.uk/schools-departments/science-engineering>

Academic Services:

<http://www.ed.ac.uk/schools-departments/academic-services>