

Programme Specification for Undergraduate Programme Leading to: BSc Environmental Sciences BSc Environmental Sciences with Placement

Applicable for all undergraduate students **starting at FHEQ Level 4 in 2020**

Version No.	Date	Notes – QA USE ONLY	QA
1	April-20	2020/21 version created with updates to College, Department and Division names; 'with Professional Experience' changed to 'with Placement'; ES1706, ES1800 and ES1806 withdrawn; ES1801 replaced by ES1810; ES1701 replaced by ES1708; ES2602, ES2603, ES2604, ES2606, ES2800 and ES2801 withdrawn; ES3602, ES3603, ES3604, ES3605, ES3606, ES3607, ES3608, ES3609, ES3610, ES3611, ES3612 and ES3615 withdrawn; ES3617 and ES3616 added.	RJC
2	Aug-20	For 2020/21 delivery: ES1709, ES2707, ES3704 added; BB1816 removed; ES2601 and ES2607 rested; and ES3601, ES3613 and ES3614 rested.	RJC

Undergraduate Programme	
1. Awarding institution	Brunel University London
2. Teaching institution(s)	Brunel University London
3. Home college/department/division	College of Health, Medicine and Life Sciences/Department of Life Sciences/Division of Environmental Sciences
4. Contributing college/department/division/ associated institution	College of Engineering and Physical Sciences/Department of Civil and Environmental Engineering
5. Programme accredited by	Institution of Environmental Sciences (IES)
6. Final award(s) and FHEQ Level of Award	BSc Environmental Sciences (FHEQ level 6) BSc Environmental Sciences with Placement (FHEQ level 6)
7. Programme title	BSc Environmental Sciences
8. Programme type (Single honours/joint)	Single Honours
9. Normal length of programme (in months) for each mode of study	36 months FT; 48 months "Thick" Sandwich; 36 months "Compressed" Sandwich
10. Maximum period of registration for each mode of study	6 years FT; 7 years "Thick" Sandwich; 6 years "Compressed" Sandwich
11. Variation(s) to September start	None for standard levels For LBIC entry see: "LBIC Life Sciences Foundation"
12. Modes of study	Full time and Sandwich
13. Modes of delivery	Standard
14. Intermediate awards and titles with FHEQ Level of Award	Cert HE Environmental Sciences (FHEQ Level 4) Dip HE Environmental Sciences (FHEQ Level 5) Dip HE Environmental Sciences with Placement (FHEQ Level 5) BSc (Ordinary) Environmental Sciences (FHEQ Level 6) BSc (Ordinary) Environmental Sciences with Placement (FHEQ Level 6)
15. UCAS code	BSc Environmental Sciences – F850 BSc Environmental Sciences with Placement – F852
16. HECoS Code	100381 (Environmental Sciences)

17. Route Code	F750UEENVSCI
18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design.	UK Quality Code for Higher Education QAA Subject Benchmark Statement (Environmental Sciences) Brunel University London 2030 Brunel Placement Learning Policy, as published under the 'Placements' section of the ' Managing Higher Education Provision with Others ' page.
19. Admission Requirements	Details of entry requirements are provided on the University's and College website. Levels of English for non-native speakers are outlined on Brunel International's language requirements pages.
20. Other relevant information (e.g. study abroad, additional information on placements)	Optional work placement is available that leads to the award of BSc Environmental Sciences with Placement. FHEQ Level 4 includes a compulsory, residential fieldtrip in the UK. FHEQ Level 5 includes an optional overseas fieldtrip.
21. Programme regulations not specified in Senate Regulation 2. Any departure from regulations specified in Senate Regulation 2 must be stated here and approved by Senate.	The Board of Examiners may award students who are registered on the Placement programmes the BSc Environmental Sciences if they meet the requirements for the award, but have failed to meet the requirements for the award for which they are registered.
22. Further information about the programme is available from the College website.	Link to programme information on the College website.

23. EDUCATIONAL AIMS OF THE PROGRAMME

The BSc in Environmental Sciences aims to develop students' understanding of our environment and how we interact with it. Students will also be trained in the skills and methods that are required to succeed in the graduate jobs market. The programme is structured in a logical, yet flexible, way:

FHEQ Level 4 – Dynamics of Natural Environments

At the outset, students will learn about the interdisciplinary principles and processes that govern the environment. This will include the physical, chemical and biological knowledge required to develop a holistic Earth system perspective and will cover theoretical, practical and field-based approaches.

FHEQ Level 5 – Environmental Change and the Anthropocene

Students will then examine how Earth systems have changed over time, with a particular focus on human influences. The "grand challenges" of environmental science will be introduced here, which include climate change, pollution, biodiversity loss, land-use change and sustainability. In turn, the effect of these changes on environmental and human health will be investigated.

FHEQ Level 6 – Environmental Solutions

The final stage of this programme will be to analyse and evaluate potential solutions to environmental problems. This will often involve the synthesis of ideas from different fields, such as sustainable development, systems thinking, technology, resource management, psychology, monitoring, modelling, policy/law or public health. Indeed, students select a number of optional topics to focus their studies on particular themes that have clear routes to employability.

Embedded within the scientific topics, students will be trained in the technical skills that environmental sector employers demand (e.g. GIS, fieldwork, data analysis, experimental techniques) and the transferable skills that underpin successful career development in any sector (e.g. communication, teamwork, creativity, leadership, IT, public engagement, statistical analyses).

24. PROGRAMME AND INTERMEDIATE LEARNING OUTCOMES

The programme provides opportunities for students to develop and demonstrate knowledge and understanding (K) cognitive (thinking) skills (C) and other skills and attributes (S) in the following areas:

FHEQ Level	Category (K = knowledge and understanding, C = cognitive (thinking) skills, S = other skills and attributes)	Learning Outcome	Associated Assessment Blocks Code(s)	Associated Study Blocks Code(s)	Associated Modular Blocks Code(s)
4					
	K	Demonstrate knowledge of core topics in environmental sciences	ES1802 ES1803 ES1804 ES1805	ES1702 ES1703 ES1704 ES1705	
	K	Demonstrate knowledge of the complexity and interconnection of Earth's processes and systems	ES1807 ES1808	ES1702 ES1703 ES1704 ES1705 ES1707	
	C	Apply subject knowledge to address practical problems	ES1810 ES1807	ES1708 ES1707	
	C	Analyse and interpret data	ES1810 ES1807	ES1708 ES1707	
	S	The ability to communicate basic scientific topics	ES1810 ES1807 ES1808	ES1708 ES1707	
	S	Demonstrate an ability to apply basic skills required for self-managed professional development (safe laboratory and field work practice, working independently or in teams, time management, organisation, information retrieval, IT, critical thinking)	ES1810 ES1807 ES1808	ES1708 ES1707	ES1800
5					
	K	Demonstrate knowledge and understanding of the major themes in environmental sciences	ES2805 ES2806	ES2706 ES2703 ES2705 ES2704	ES2601
	K	Demonstrate knowledge of the changes to Earth's processes and systems on a range of spatio-temporal scales and their driving factors	ES2805 ES2806 ES2801 ES2802	ES2706 ES2703 ES2705 ES2704 ES2701	
	K	Demonstrate knowledge of a relevant professional sector (Placement pathway)			ES2555 ES2556 ES2557
	C	Apply subject knowledge to address familiar and unfamiliar problems	ES2801 ES2802	ES2701	ES2601 ES2607
	C	Analyse and interpret data and scientific literature	ES2803 ES2804	ES2702	ES2601 ES2607

	C	Review and reflect on a relevant workplace experience (Placement pathway)			ES2555 ES2556 ES2557
	S	Demonstrate an ability to communicate scientific data and literature	ES2803 ES2804 ES2801	ES2702 ES2701	
	S	Demonstrate an ability to apply advanced skills required for self-managed professional development (experimental and field techniques, working independently or in teams, time management, organisation, information retrieval, IT, critical thinking)	ES2803 ES2804	ES2702 ES2701	ES2800
	S	Demonstrate an ability to work as part of a team in a relevant workplace environment (Placement pathway)			ES2555 ES2556 ES2557
6					
	K	Demonstrate in-depth knowledge and understanding of selected topics in environmental sciences	ES3802 ES3801	ES3701 ES3702	ES3601 ES3603 ES3605 ES3617 ES3616
	K	Demonstrate specialised knowledge of the methods by which society can actively respond to environmental challenges and the constraints of responding to these challenges	ES3802 ES3803 ES3801	ES3701 ES3702	ES3600 ES3601 ES3603 ES3605 ES3617 ES3616
	K	Demonstrate engagement with current developments in environmental sciences and awareness of the wider implications, debate and controversies surrounding these topics	ES3803 ES3801	ES3701 ES3702 ES3703	ES3600 ES3607 ES3601 ES3603 ES3605 ES3617 ES3616
	C	Synthesise subject knowledge to address complex problems	ES3803 ES3801	ES3701 ES3702 ES3703	ES3600 ES3601 ES3603 ES3605 ES3613 ES3614 ES3617 ES3616
	C	Critically analyse and interpret data, evaluating it in light of current literature			ES3600 ES3601 ES3603

					ES3605 ES3613 ES3614 ES3617 ES3616
	S	Effectively communicate complex scientific information	ES3803 ES3801	ES3803 ES3703	ES3600
	S	Apply specialised skills required for self-managed professional development (e.g. experimental and field techniques, working independently or in teams, time management, organisation, information retrieval, IT, critical thinking)	ES3803 ES3801	ES3701 ES3702 ES3703	ES3800

Learning/teaching strategies and methods to enable learning outcomes to be achieved, including formative assessments

The programme learning and teaching strategy is structured around a “backbone” of compulsory Study Blocks that cover the disciplinary building blocks of Environmental Science. The content develops in a logical and incremental way across the Levels. Similarly, the teaching strategy also develops in sophistication throughout the programme: as the programme progresses, we aim for the students to become much more active in the learning process via a gradual introduction of Problem Based Learning (PBL) exercises and the encouragement of self-directed learning. Formative assessments will be key to the learning process and these will range from online Multiple Choice Questions (MCQs) with embedded feedback to formative group exercises that lead into similar, individual summative assessments.

The disciplinary “backbone” is further developed with optional Modular Blocks on specialist topics in FHEQ Levels 5 and 6 as well as more skills-based Study Blocks throughout the programme. The skills Blocks focus on techniques relevant to laboratory work, data analysis, modelling and fieldwork techniques. Finally, the “Case Studies” Study Block in each Level is based around formative exercises that aim to crystallise students’ understanding of disciplinary concepts by encouraging them to synthesise those ideas in response to cross-disciplinary problems. Those synthesis skills are then assessed in the Synoptic Assessments at each Level.

Summative assessment strategies and methods to enable learning outcomes to be demonstrated

Students are assessed by in-year coursework, end-of-term examinations and a final year project. The coursework assignments and deadlines are set at the beginning of the academic year, encouraging students to see the relevance of the formative activities to the summative assessments. The assignments are challenging (requiring integration of information obtained from various sources) and relevant to employment and further study (analysis, interpretation and communication of data, evaluated in context of current knowledge). Examinations testing knowledge, understanding and problem solving in the main subject areas in environmental sciences increase in complexity as students progress through the programme, and require students to demonstrate an appreciation of the complexity of the environment and engagement with current issues. The individual project is the single most important assessment of the programme, requiring students to undertake and report on an extended, independent investigation. Each learning outcome is covered by more than one assessment.

25. Programme Structure, progression and award requirements

Programme structures and features: levels, assessment blocks, credit and progression and award requirements

- **Compulsory block:** one which all students registered for the award are required to take as part of their programme of study. These will be listed in the left hand column;
- **Optional block:** one which students choose from an 'option range'. These will be listed in the right hand column;
- A **core assessment** is an assessment identified within an assessment block or modular block (either compulsory or optional) which must be passed (at grade D- or better) in order to be eligible to progress and to be eligible for the final award. All core assessments must be specified on the programme specification next to the appropriate assessment or modular block:

Where students are expected to pass the block at D- or better, but not necessarily all elements, then the block itself is core.

e.g. AB3000 Project (40)

Core: Block

Where only some elements of assessments are required to be passed at D- or better, these will be identified by listing each element that is core

e.g. ABXXX1 Title (XX credits)

Core: 1 & 4

Where students are expected to pass all assessments in a block then this will be identified. By setting the assessment this way, students are also required to pass the block by default. This will be identified thus:

e.g. ABXXXX Title (XX credits)

Core: All, Block

- A **non-core assessment** does not have to be passed at grade D- or better, but must be better than a grade F, in order to progress and to be eligible for the final award.

Foundation Level

A Foundation Level structure is specified in document "Validated Programme Element Specification for LBIC Life Sciences Foundation. This document also specifies the admission and progression requirements.

FHEQ Level 4

Compulsory assessment block codes, titles and credit

ES1802 Biological Processes(10)
 ES1803 Earth System Science (10)
 ES1804 Environmental Chemistry (10)
 ES1805 The Biosphere and Ecology (10)
 ES1810 Data Analysis and Research Skills in Environmental Science I (40)
 ES1807 Dynamics of Natural Environments – Synoptic Coursework (20)
 ES1808 Dynamics of Natural Environments – Synoptic Exam (20)

Optional assessment block codes, titles and credits

<p>Compulsory study block codes, titles and credit volume</p> <p>ES1702 Biological Processes (20) ES1703 Earth System Science (20) ES1704 Environmental Chemistry (20) ES1705 The Biosphere and Ecology(20) ES1708 Research Skills, GIS and Fieldwork I (30) ES1707 Natural Environments Case Studies (10) ES1700 Leadership for Sustainability I (5) ES1709 Tutoring (0, zero)</p>	<p>Optional Study block codes, titles and credit volume</p>
<p>Compulsory modular block codes, titles and credits</p>	<p>Optional modular block codes, titles and credits</p>
<p>FHEQ Level 4 Progression and Award Requirements</p> <p>As per Senate Regulation 2</p>	

<p>FHEQ Level 5</p>	
<p>Compulsory assessment block codes, titles and credits</p> <p>ES2805 Climate Change and the Sustainability Challenge(15) ES2806 Environmental Pollution and Ecosystem Stressors (15) ES2803 Data Analysis and Research Skills in Environmental Science IIa (15) ES2804 Data Analysis and Research Skills in Environmental Science IIb (15) ES2801 Environmental Change and the Anthropocene – Synoptic Coursework (20) ES2802 Environmental Change and the Anthropocene – Synoptic Exam (20)</p>	<p>Optional assessment block codes, titles and credits</p>
<p>Compulsory study block codes, titles and credit volume</p> <p>ES2706 Ecosystem Stressors (20) ES2703 Climate Change (20) ES2705 Environmental Pollution (20) ES2704 The Sustainability Challenge (20) ES2702 Research Skills, GIS and Fieldwork II (10) ES2701 Anthropocene Case Studies (10) ES2700 Leadership for Sustainability II (5) ES2707 Tutoring (0, zero)</p>	<p>Optional Study block codes, titles and credit volume</p>

Compulsory modular block codes, titles and credits	Optional modular block codes, titles and credits <i>For the "Environment" stream, choose:</i> ES2601 Environmental Health (20) <i>For the "Infrastructure" stream, choose:</i> ES2607 Introduction to Contemporary Civil Engineering (20) NOTE: The modules ES2607 will be paused in 2020-21, so will not be available to students.
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FHEQ Level 5 Progression and Award Requirements

As per Senate [Regulation 2](#)

Students on "BSc Environmental Sciences with Placement" programme will progress to "Level 5 – Sandwich Placement"; students on the "BSc Environmental Sciences" programme will progress to Level 6.

FHEQ Level 5 – Sandwich Placement

Compulsory assessment block codes, titles and credits	Optional assessment block codes, titles and credits
Compulsory study block codes, titles and credit volume	Optional study block codes, titles and credit volume
Compulsory modular block codes, titles and credits <i>For "thick" sandwich mode:</i> ES2555 Professional Experience (120) <i>For "compressed" sandwich mode:</i> ES2556 Professional Experience I (60) ES2557 Professional Experience II (60)	Optional modular block codes, titles and credits

FHEQ Level 5 Placement Progression and Award Requirements

As per Senate [Regulation 2](#)

For BSc Environmental Sciences with Placement, ES2555 (or ES2556 and ES2557) will contribute 25% of the FHEQ Level 5 profile and 8.33% of the overall degree calculation.

FHEQ Level 6

Compulsory assessment block codes, titles and credits ES3802 Sustainable Development and Environmental Governance (10) ES3803 Driving Change and Responding to Problems (20) ES3801 Environmental Solutions – Synoptic Exam (20)	Optional assessment block codes, titles and credits
Compulsory study block codes, titles and credit volume ES3701 Sustainable Development (20) ES3702 Environmental Governance (20) ES3703 Planetary Health Case Studies (10) ES3704 Tutoring (0, zero)	Optional study block codes, titles and credit volume

Compulsory modular block codes, titles and credits	Optional modular block codes, titles and credits
<p>ES3600 Individual Project (40) CORE</p>	<p><i>For the "Environment" stream, choose 30 credits from:</i> ES3601 Pollution Solutions (15) ES3617 Ecological Public Health (15) ES3616 Nature-Based Climate Solutions (15)</p> <p><i>For the "Sustainable Engineering" stream, choose:</i> ES3613 Sustainable Construction (15) ES3614 Sustainable Infrastructure Development (15)</p> <p>NOTE: The modules ES3601, ES3613 and ES3614 will be paused in 2020-21, so will not be available to students.</p>

FHEQ Level 6 Progression and Award Requirements

As per Senate [Regulation 2](#)

For BSc Environmental Sciences with Placement, ES2555 (or ES2556 and ES2557) will contribute 25% of the FHEQ Level 5 profile and 8.33% of the overall degree calculation

If registered on the BSc Environmental Sciences with Placement programme and the work placement module ES2555 (or ES2556 and ES2557) is not passed at D- or above, the degree of BSc Environmental Sciences may be awarded by the Board of Examiners.

Please note: this specification provides a concise summary of the main features of the programme and the learning outcomes that a student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods can be found in the modular block, assessment and study block outlines and other programme and block information. The accuracy of the information contained in this document is reviewed by the University from time to time and whenever a modification occurs.