

Programme Specification for Integrated Masters Programme Leading to: MSci Environmental Sciences MSci 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Department and Division names; 'with Professional Experience' replaced with 'with Placement' ES1706, ES1800 and ES1806 withdrawn; ES1801 replaced by ES180xx; ES1701 replaced by ES17xx; ES2602, ES2603, ES2604, ES2606, ES2800 and ES2801 withdrawn; ES3602, ES3603, ES3604, ES3605, ES3606, ES3607, ES3608, ES3609, ES3610, ES3611, ES3612 and ES3615 withdrawn; ES360X and ES360Y added.	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/ 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	
6. Final award(s) and FHEQ Level of Award	MSci Environmental Sciences (FHEQ level 7) MSci Environmental Sciences with Placement (FHEQ level 7)
7. Programme title	MSci Environmental Sciences
8. Programme type (Single honours/joint)	Single Honours
9. Normal length of programme (in months) for each mode of study	48 months FT; 60 months "Thick" Sandwich; 48 months "Compressed" Sandwich
10. Maximum period of registration for each mode of study	8 years FT; 9 years "Thick" Sandwich; 8 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 and 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) BSc Environmental Sciences (FHEQ Level 6) BSc Environmental Sciences with Placement (FHEQ Level 6)
15. UCAS Code	MSci Environmental Sciences - F851

	MSci Environmental Sciences with Placement (Thick Sandwich) - F853 MSci Environmental Sciences with Placement (Compressed Sandwich) - TBC
16. HECoS Code	100381 (Environmental Sciences)
17. Route Code	F750UMENVSCI
18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design.	QAA UK Quality Code for Higher Education QAA Subject Benchmark Statement (Environmental Sciences) Brunel University London Strategic Plan 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 MSci 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 MSci 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. As per SR2, Students are permitted to be reassessed at up to 40 credits. Where a student does not achieve a pass grade for ES5610 Group Project, reassessment is permitted at up to 45 credits for that module only.
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 MSci in Environmental Sciences aims to develop students' high-level 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 next 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 and lead to a more specialised MSci pathway.

FHEQ Level 7 – Environmental Practice

For MSci students, the programme progresses to incorporate specialised content that develops the knowledge and skills required to practice as an environmental scientist at a high level. There is a particular focus on the synthesis of ideas across disciplinary boundaries within the MSci. To this end, students undertake a significant research project that allows them to develop their own ideas under the supervision of an expert in the field.

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	ES180x ES1807	ES170x ES1707	
	C	Analyse and interpret data	ES180x ES1807	ES170x ES1707	
	S	The ability to communicate basic scientific topics	ES180x ES1807 ES1808	ES170x 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)	ES180x ES1807 ES1808	ES170x 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 ES360X ES360Y
	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 ES360X ES360Y
	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 ES360X ES360Y
	C	Synthesise subject knowledge to address complex problems	ES3803 ES3801	ES3701 ES3702 ES3703	ES3600 ES3601 ES3603 ES3605 ES3613 ES3614 ES360X

					ES360Y
	C	Critically analyse and interpret data, evaluating it in light of current literature			ES3600 ES3601 ES3603 ES3605 ES3613 ES3614 ES360X ES360Y
	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
7					
	K	Demonstrate in-depth knowledge and critical understanding of specialised topics in environmental sciences			ES5610 IE5651 IE5652 IE5653 IE5504 IE5654 IE5655 IE5656 IE5657 IE5606
	K	Demonstrate practical knowledge of the methods by which society can actively respond to specific environmental challenges			ES5610 IE5651 IE5652 IE5653 IE5504 IE5654 IE5655 IE5656 IE5657 IE5606 IE5658 IE5659 IE5660 IE5661 CS5651 CS5652 CS5653 ME5567 ME5568 ME5569 CE5011 CE5659 CE5014
	K	Demonstrate engagement with current developments in a specialised area of			ES5610 IE5651 IE5652

		environmental sciences and awareness of the wider implications, debate and controversies surrounding these topics			IE5653 IE5504 IE5654 IE5655 IE5656 IE5657 IE5606 IE5658 IE5659 IE5660 IE5661 CS5651 CS5652 CS5653 ME5567 ME5568 ME5569 CE5011 CE5659 CE5014
	C	Apply specialised knowledge to address complex familiar and unfamiliar problems			ES5610 IE5651 IE5652 IE5653 IE5504 IE5654 IE5655 IE5656 IE5657 IE5606 IE5658 IE5659 IE5660 IE5661 CS5651 CS5652 CS5653 ME5567 ME5568 ME5569 CE5011 CE5659 CE5014
	C	Critically analyse and interpret data from a specialised area of environmental science, evaluating it in light of current literature			ES5610 IE5651 IE5652 IE5653 IE5504 IE5654 IE5655 IE5656 IE5657 IE5606
	S	Effectively communicate complex scientific information about a specialised field			ES5610 IE5651 IE5652 IE5653 IE5504 IE5654 IE5655 IE5656

					IE5657 IE5606
	S	Demonstrate an ability to apply specialised skills required for self-managed professional development and practice (experimental and field techniques, working independently or in teams, time management, organisation, information retrieval, IT, critical thinking)			ES5610 IE5651 IE5652 IE5653 IE5504 IE5654 IE5655 IE5656 IE5657 IE5606

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, 6 and 7 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. Finally, the “Case Studies” Study Block in FHEQ Levels 4, 5 and 6 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 FHEQ 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 two significant individual and group projects. 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 and group projects are the most important assessments of the programme, requiring students to plan, undertake and report on extended investigations. 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	Optional assessment block codes, titles and credits
ES1802 Biological Processes (10) ES1803 Earth System Science (10) ES1804 Environmental Chemistry (10) ES1805 The Biosphere and Ecology (10) ES180x 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)	BB1816 Advanced Mathematical Skills for Environmental Scientists (0)
Compulsory study block codes, titles and credit volume	Optional Study block codes, titles and credit volume
ES1702 Biological Processes (20) ES1703 Earth System Science (20) ES1704 Environmental Chemistry (20) ES1705 The Biosphere and Ecology (20) ES170x Research Skills, GIS and Fieldwork I (30) ES1707 Natural Environments Case Studies (10) ES1700 Leadership for Sustainability I (5)	
Compulsory modular block codes, titles and credits	Optional modular block codes, titles and credits

FHEQ Level 4 Progression and Award Requirements

As per [Senate Regulation 2](#)

FHEQ Level 5

Compulsory assessment block codes, titles and credits

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)

Optional assessment block codes, titles and credits

Compulsory study block codes, titles and credit volume

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)

Optional Study block codes, titles and credit volume

Compulsory modular block codes, titles and credits

Optional modular block codes, titles and credits

Student Choose one module from the following.

For the "Environment" stream, choose:
ES2601 Environmental Health (20)

For the "Infrastructure" stream, choose:
ES2607 Introduction to Contemporary Civil Engineering (20)

FHEQ Level 5 Progression and Award Requirements

As per [Senate Regulation 2](#)

Students on "MSci Environmental Sciences with Placement" programme will progress to "FHEQ Level 5 – Sandwich Placement"; students on the "MSci Environmental Sciences" programme will progress to FHEQ 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 MSci Environmental Sciences with Placement, ES2555 (or ES2556 and ES2557) will contribute 25% of the FHEQ Level 5 profile and 5% 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)	Optional study block codes, titles and credit volume
Compulsory modular block codes, titles and credits ES3600 Individual Project (40) CORE	Optional modular block codes, titles and credits For the "Environment" stream, choose 30 credits from: ES3601 Pollution Solutions (15) ES360X Ecological Public Health (15) ES360Y Nature-Based Climate Solutions (15) For the "Sustainable Engineering" stream, choose: ES3613 Sustainable Construction (15) ES3614 Sustainable Infrastructure Development (15)
FHEQ Level 6 Progression and Award Requirements As per Senate Regulation 2 For MSci Environmental Sciences with Placement, ES2555 (or ES2556 and ES2557) will contribute 25% of the FHEQ Level 5 profile and 5% of the overall degree calculation If registered on the MSci 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 MSci Environmental Sciences may be awarded by the Board of Examiners.	

FHEQ Level 7**Compulsory modular block codes, titles and credits**

ES5610 Group Project (45) CORE

Optional modular block codes, titles and credits

For the "Environment", "Sustainable Engineering", "Geotech" or "Public Health" streams, choose 75 credits from:

ES5608 Climate Change: Science and Impacts (15)

ES5609 Biosphere II (15)

ES5611 GIS and Data Analysis (15)

ES5612 Environmental Law (15)

ES5613 Environmental Management (15)

ES5614 Integrated Pollution (30)

ES5615 Environmental Monitoring (30)

For the "Toxicology" stream, choose 30-60 credits from:

ES5616 Priority Pollutants and Human Health Effects (15)

ES5617 Essentials In Ecotoxicology (15)

ES5618 Designing, Analysing and Interpreting (Eco) Toxicological Studies (15)

ES5619 Reproductive Toxicology and Endocrine Disruption (15)

Plus up to 45 from the "Environment" stream.

For the "Data Analytics" stream, choose 30-45 credits from:

CS5651 Big Data Analytics (15)

CS5652 Data Visualisation (15)

CS5653 Quantitative Data Analysis (15)

Plus up to 45 credits from the "Environment" stream.

For the "Water Engineering" stream, choose 30-45 credits from:

CE5011 Water Infrastructure Engineering (15)

CE5659 Water Treatment Engineering (15)

CE5014 Water Process Engineering (15)

Plus up to 45 credits from the "Environment" stream.

FHEQ Level 7 Progression and Award Requirements**As per Appendix B of [Senate Regulation 2](#)**

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

If registered on the MSci 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 MSci 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.