

## Energy Resilience and the Built Environment PhD

Academic Year 2022/23

Awarding body	Loughborough University
Teaching institution (if different)	Loughborough University and UCL (EPSRC funded) and Irish Universities, that are partners in the Marine and Renewable Energy Ireland (MaREI) centre (SFI funded).
Programme title	Energy Resilience and the Built Environment
Primary award	Doctor of Philosophy (PhD) or Master of Philosophy (MPhil)
Mode of Study	Full-time and Part-time
Programme length	Full-time: 4 years Part-time: 8 years
Owning school/department	School of Architecture, Building and Civil Engineering
Campus	Loughborough
Admissions criteria	<a href="https://www.lboro.ac.uk/study/postgraduate/research-degrees/">https://www.lboro.ac.uk/study/postgraduate/research-degrees/</a>
Date at which the programme specification was published	

### Accreditation

None

### Programme Aims

This intensive four-year programme will train graduates to understand the complex, systemic, interdisciplinary challenges faced in achieving a resilient supply of energy to create a healthy and productive built environment. The programme will equip students with the research skills and multi-disciplinary credentials needed to be leaders in the field.

This will be achieved by immersion in a four-year PhD programme which includes a structured taught programme delivered by experts from UCL, Loughborough University and MaREI. This taught programme is supplemented by generic research skills training, and cohort-based learning comprising seminars, conferences, summer schools, workshops etc.

The programme will equip students with the state-of-the-art skills necessary to carry out their doctoral research project. The resulting PhD thesis will provide a new contribution to knowledge and contain original work worthy of peer-reviewed publication.

### Benchmarks

**Relevant subject benchmark statements and other external and internal reference points used to inform programme outcomes:**

The Frameworks for Higher Education Qualifications of UK Degrees  
Doctoral Degree Characteristics Statement (QAA)  
Credit Level Descriptors for Higher Education (SEEC)  
Loughborough University Quality Reviews  
Research Council Mid-term and Annual Reviews

## Learning Outcomes

### Knowledge and Understanding

The creation, development and implementation of a significant programme of research concerned with the built environment, its energy demands and energy supply that will lead to new knowledge disseminated through the production of a PhD thesis.

This will be supported by:

- An understanding of the UK and European energy landscape and how energy and climate change challenges are interlinked through technical, environmental and behavioral factors.
- The acquisition of core skills in the areas of energy flexibility and resilience, technology and system performance and comfort, health and well-being.
- The acquisition of the research-specific skills that are needed to successfully complete the individually chosen doctoral level research programme.
- The assimilation of the generic skills needed to conduct ethical and safe research, to critically assess research findings, to effectively communicate research outcomes, and to convince others of its importance.

### Skills and other attributes

#### Subject-specific cognitive skills:

See above

#### Subject-specific practical skills:

See above

#### Key transferable skills:

See above

## University Regulations

University Regulations for Postgraduate Research study are set out in [Regulation XXVI](#) (Higher Degrees by Research).

Please see the [Terms and Conditions of Study](#) for detailed information on your contract with the University.

## Programme structure

Students will follow an integrated, 4-year training programme shaped by three broad themes: energy flexibility and resilience; technology and system performance; and comfort, health and well-being. The programme is front loaded (Part R0) with *compulsory taught courses* which enable individuals from a wide range of disciplinary backgrounds to understand the challenges associated with each theme. *Research-specific training courses* will provide the specific skills needed to enable each student to succeed in their chosen research project. *Generic skills training activities* will equip students to deploy their research capabilities effectively. Each course will be delivered by academics drawn from the three partnering organisations. The training and development undertaken in Part R0 will enable students to make an immediate start with their PhDs (Parts R1 to R3). Ongoing training in research-specific and generic skills will continue in Parts R1 and R2.

## Part R0

Doctoral Researchers will complete the following:

### **Research-specific training courses assessed on a pass/fail/attendance basis**

Students will undertake eight compulsory, assessed, training courses in year R0.

	<b>Module title</b>
1	CVZERBE01: Energy Resilience in the Global Built Environment
2	CVZERBE02: Energy Economics
3	CVZERBE03: Energy and Buildings: Physics and Engineering
4	CVZERBE04: Socio-technical Perspectives: Theory and Methods
5	CVZERBE05: Energy Data and Analysis
6	CVZERBE06: Energy and Buildings: Modelling
7	CVZERBE07: Researcher Skills 1
8	CVZERBE08: Researcher Skills 2

In addition, students will undertake PhD project-specific skills training in R0.

### **Generic skills training activities assessed on an attendance basis**

Participation in CDT workshops, seminars, conferences and the annual ERBE summer school and colloquium. Collaboration with industrial/stakeholder partners as appropriate.

### **Progression assessment**

Students' progress in the compulsory, assessed, training courses will be reviewed at the mid-way point of Part R0.

At the end of Part R0, students will be assessed based on the training courses and an 8,000-word report consisting of a complete PhD research proposal, an initial literature review, and a PhD pilot study.

Students are expected to complete the generic skills training activities and pass all the compulsory research-specific training courses (pass mark, 50%) with an aggregate, overall average, mark that exceeds 60%.

Students who fail any of the compulsory courses will be given a single opportunity to resit the failed coursework(s). For calculating the overall average mark, resits will be capped at 50%. The requirements for the resits will be set by the course coordinators. Students must arrange this directly with their course coordinators.

## Part R1

Doctoral Researchers will complete the following:

### **Research-specific training courses assessed on a pass/fail/attendance basis.**

PhD project-specific skills training R1.

### **Generic skills training activities assessed on an attendance basis.**

Participation in CDT workshops, seminars, conferences and the summer school and colloquium. Collaboration with industrial/stakeholder partners as appropriate.

### **Progression assessment**

Submission of a 1000-word research report at 6 months for part-time Doctoral Researchers.

Submission of a 2,000-word research report at the mid-way point of Part R1 and submission of a satisfactory 10,000-word research report (end of Part report) towards the end of Part R1 in accordance with the provisions of Regulation XXVI.

Typically, the timetable for reports in R1 will follow the schedule below.

Time spent in R1	6 months	12 months	24 months
Full-time	2,000-word mid-part report	10,000-word end of part report	

Part-time	1,000-word research report	2,000-word mid-part report	10,000-word end of part report
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## Part R2

Doctoral Researchers will complete the following:

### **Research-specific training courses assessed on a pass/fail/attendance basis.**

PhD project-specific skills training R2

### **Generic skills training activities assessed on an attendance basis.**

Participation in CDT workshops, seminars, conferences and the summer school and colloquium. Collaboration with industrial/stakeholder partners as appropriate.

### **Progression Assessment**

PhD candidates: Submission of a mid-part review for part time Doctoral Researchers, and a satisfactory 10,000-word research report (end of Part report) towards the end of Part R2 in accordance with the provisions of Regulation XXVI.

Typically, the timetable for reports in R2 will follow the schedule below.

Time spent in R2	12 months	24 months
Full-time	10,000-word end of part report	
Part-time	Mid-part report	10,000-word end of part report

MPhil candidates: Submission of their formal MPhil thesis for examination in accordance with the provisions of Regulation XXVI at the end of part R2.

## Part R3

Doctoral Researchers will complete the following:

Submission of a mid-part report for part-time Doctoral Researchers.

At the end of R3, submission of a formal PhD thesis for examination in accordance with the provisions of Regulation XXVI.

Typically, the timetable for reports in R3 will follow the schedule below.

Time spent in R3	12 months	24 months
Full-time	PhD submission	
Part-time	Mid-part report	PhD submission

## Criteria for Progression and Degree Award

To progress from Part R0 to R1, Part R1 to Part R2 and from Part R2 to Part R3, and to be eligible for an award, candidates must satisfy the assessment requirements set out in [Regulation XXVI](#). Candidates must complete all the requirements for each Part outlined above in order to progress to the next Part. If an end of part report does not meet the standards required for progression, candidates may undertake further work and resubmit the report on one occasion only in accordance with the provisions of [Regulation XXVI](#).