# Module Specification

## Low Carbon Design

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## Part 1: Information

**Module title:** Low Carbon Design

**Module code:** UBLL7J-15-3

**Level:** Level 6

**For implementation from:** 2028-29

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**College:** College of Arts, Technology and Environment

**School:** CATE School of Architecture and Environment

**Partner institutions:** None

**Field:** Architecture and the Built Environment

**Module type:** Module

**Pre-requisites:** None

**Excluded combinations:** None

**Co-requisites:** None

**Continuing professional development:** No

**Professional, statutory or regulatory body requirements:** None

## Part 2: Description

**Overview:** Low Carbon Design is a semester-long course that provides students with the technical skills needed to understand the principles and techniques required to achieve low carbon proposals. It operates alongside the Architecture and Planning studio to provide a technical core for students' design projects, focusing on carbon reduction, environmental responsibility, and sustainability. This module emphasises the application of zero carbon frameworks and equips students to actively incorporate and validate zero carbon strategies in their work. Through a combination

of digital tools and lifecycle analysis, students gain a hands-on understanding of how to design and build responsibly, sustainably, and in alignment with evolving carbon standards.

Building on prior knowledge developed through earlier years of study this module equips students to specialise in sustainable technology to reduce embodied carbon and optimise building performance. It aligns with competencies in climate change, regenerative design, and digital systems, and it encourages a research-driven and reflective approach to professional development.

In addition to low carbon and sustainability goals, this module equips students to address fire and life safety within their designs. Students learn to incorporate advanced structural, construction, environmental, and technological strategies that comply with relevant performance, fire, and safety standards. Emphasis is placed on resilience and long-term impact, ensuring that design solutions are not only sustainable but also safe and resilient for occupants throughout a building's lifecycle. The module includes training on assessing fire risks, selecting fire-resistant materials, and integrating fire-safe design principles alongside carbon reduction measures, preparing students to meet comprehensive safety and sustainability benchmarks.

Aligning with PSRB commitments to climate literacy and safe building design, this module emphasises carbon-neutral solutions, health, and life safety. Students develop technical skills for sustainable construction and resource management, preparing to meet standards for climate resilience and sustainable practice.

**Features:** Low Carbon Frameworks: Comprehensive understanding of low carbon standards and frameworks, empowering students to create responsible designs that meet these frameworks.

Fire and Safety: Students will gain the skills to incorporate fire-resistant materials, plan for safe building evacuation routes, and apply fire and life safety regulations to ensure that their designs meet comprehensive performance and safety standards.

**Educational aims:** This module aims to provide students with the technical expertise and ethical grounding required to produce designs that meet low carbon standards. By the end of the module, students will:

Apply low carbon frameworks and standards to inform environmentally responsible and socially valuable design decisions.

Understanding best practice detailing principles in relation to low carbon design and fire and life safety.

Reflect critically on their technical and professional development, adapting to evolving standards and innovations in sustainable design.

**Outline syllabus:** The syllabus integrates low carbon design principles to provide a robust technical foundation for sustainable architectural solutions.

The module begins by introducing low carbon frameworks and principles. Students examine these standards, regulations, and ethical frameworks relevant to architecture and spatial planning, exploring their applications within their proposals. Through case studies and practical examples, students learn to assess and incorporate low carbon strategies in projects, considering lifecycle impacts, regenerative design, and the ethical sourcing of materials.

In the computer lab, students engage with digital modelling techniques essential for low carbon design to optimise their designs based on carbon metrics and sustainability goals. The emphasis is on practical applications of these tools, such as form-finding and optimisation to reduce embodied carbon, with students learning to evaluate and enhance the environmental performance of their designs.

In the final stage of the module, students synthesise their learning through a Technical and Carbon Performance Report based on their design project. This report requires students to document strategies applied in their designs to minimise carbon footprint. This technical assessment aligns their design with low carbon standards and validates the project’s environmental impact through evidence-based methods. It

also includes a safety analysis, demonstrating compliance with fire and life safety standards and verifying that their designs meet essential regulatory requirements for occupant protection.

## Part 3: Teaching and learning methods

**Teaching and learning methods:** The module combines lab-based skills training, research-led seminars, and guided self-study to support the theoretical and practical aspects of low carbon design:

Seminars and Lectures: These sessions introduce low carbon principles and sustainable design methodologies, supported by case studies on the successful application of low carbon frameworks.

Guided Self-Directed Study: Students are encouraged to independently explore digital methods specific to their design interests, fostering specialisation and technical proficiency.

Research Tutorials: Supervised research tutorials provide tailored guidance on integrating low carbon strategies into projects, with feedback on technical and ethical aspects.

**Module Learning outcomes:** On successful completion of this module students will achieve the following learning outcomes.

**MO1** Understand and apply low carbon frameworks and circular/resource efficient strategies to a design project

**MO2** Evaluate a design proposal against performance standards and regulatory frameworks, including fire and life safety.

**MO3** Produce a comprehensive technical strategy, including best practice architectural details, for a design proposal documenting low carbon design and construction approaches.

**Hours to be allocated:** 150

**Contact hours:**

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

**Reading list:** The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://rl.talis.com/3/uwe/lists/4940381B-CF18-319A-6090-B567D60C0042.html

## Part 4: Assessment

**Assessment strategy:** Detailed design report (2000 words) (100%)
The assessment comprises a comprehensive technical report that evaluates the student's application of low carbon principles in their Design Studio project. It requires evidence of how the design meets or exceeds environmental standards, including lifecycle assessments, ethical sourcing, and regenerative design strategies. The report must demonstrate an understanding of regulatory standards and sustainability frameworks applied within the project.

Formative Feedback: Ongoing feedback during lab sessions and tutorials provides students with opportunities to refine their technical report based on interim reviews and critiques.

**Assessment tasks:**

**Report** (First Sit)
Description: Detailed design report (2000 words).
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

**Report** (Resit)

Description: Detailed design report (2000 words).

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

## Part 5: Contributes towards

This module contributes towards the following programmes of study:

Architecture and Planning [Frenchay] BA (Hons) 2025-26