



Module Specification

Zero Carbon Buildings (Environments and Materials)

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Part 1: Information

Module title: Zero Carbon Buildings (Environments and Materials)

Module code: UBLMK1-30-1

Level: Level 4

For implementation from: 2022-23

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Architecture & Built Environ

Partner institutions: None

Delivery locations: City of Bristol College

Field: Architecture and the Built Environment, LLE

Module type: Standard

Pre-requisites: None

Excluded combinations: Environmental Physics and Materials 2022-23

Co-requisites: None

Continuing professional development: Yes

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: BEFORE: Learners joining this level 4 course are expected to have fundamental study skills associated with a level 3 qualification, such as an a-level, BTEC, Access course or Foundation year.

DURING: Learners will explore aspects of zero carbon buildings including indoor environmental design (heat, light, sound, energy) and material selection (timber, metals, concrete, bricks and emerging materials). They will also learn to present

work in the form of a professional report.

AFTER: Upon completion of the course, learners shall have the knowledge to engage with more advanced design related learning such as the level 5 course Zero Carbon Buildings (Technology and Modelling).

Features: This module has been designed to be delivered as a stand-alone credit-bearing short course, meeting the criteria for Lifelong Loan Entitlement funding through the Student Loan Company.

The learning outcomes map directly to the existing UWE modules UBLMSS-30-1, which form part of our Construction and Services related degrees, and so learners who progress to the full programme can use the short course to offset these credits.

As this module can be taken as a stand-alone short course, where learners may lack the peer support and institutional knowledge of students on full degree programmes, the course has been designed to meet the highest standard of inclusive design, including:

- A primary in-person teaching environment, that represent at least 72 contact hours out of a total 300 hours of learning (25%).
- A secondary online learning environment where material is available in digital formats, including recordings of in-person delivery.
- Learning material and online reading publications in formats more accessible to neurodiverse learners.
- Each element of learning shall be divided into short presentations on theory, followed by interactive learning activities, using technology enhanced learning, detailed session plans and related reading lists.
- Where possible the use of hands-on learning equipment and real-world case studies, will be used to give the learning a professional focus.

Educational aims: See learning outcomes.

Outline syllabus: Materials: timber; bricks and masonry; iron and steel; concrete; glass; polymers; emerging materials; carbon footprints.

Building Science: comfort and health; climate and weather; steady state heat flow; ventilation; condensation; acoustics; light and lighting; heat gains; energy.

Sustainable practice and design.

Part 3: Teaching and learning methods

Teaching and learning methods: Tutorials reinforce module content through worked examples and discussion. Some will focus on the mathematical and analytic techniques required to fully understand and describe properties of materials and environments.

Laboratories and demonstrations provide tangible evidence for, and explanation of, topics covered in the lecture course and develops the skills of observation, data collection, analysis and presentation.

Contact time will primarily be face-to-face, with secondary supporting material being made available through a diverse and accessible virtual learning environment.

In parallel with this course free enhancement courses will be offered by the UWE Library in relation to academic study skills.

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

MO1 Identify and calculate the technical aspects of indoor building environments, such as heat, humidity, light, sound and air quality, explaining the underlying scientific principles and the link to health, comfort, energy use and carbon emissions.

MO2 Answer questions relating to the physical properties and related carbon footprint of a range of construction materials and how aspects of quality can be tested using established scientific processes, to judge suitability for use in construction.

MO3 Summarise the objectives, procedures, analysis and findings of a science based evaluation relating to either a construction materials or an aspect of indoor environments, using professional report writing techniques.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ublmk1-30-1.html) via the following link <https://uwe.rl.talis.com/modules/ublmk1-30-1.html>

Part 4: Assessment

Assessment strategy: A key target audience of the module are learners who may be undertaking it as a stand-alone short course and who may be new to the learning culture of higher education.

An element of continuous assessment will be used as a means to encourage the development of good study habits and allow timely constructive support and feedback. There will also be a requirement to demonstrate skills relating to information literacy and report writing, that would be transferable to a professional environment.

Component A: Regular online tests run through a virtual learning environment. These may include both multiple choice and short answer questions. This will encourage engagement on a regular basis with the learning, and also test knowledge of the core material.

Component B: a written report on practical and lab based explorations.

Resit shall repeat the initial assessment format with alternative questions as appropriate.

Assessment components:

Online Assignment - Component A (First Sit)

Description: Online Tests (3 hours)

6 Regular online tests, spread over the full run of the module.

These will mainly be multiple choice and short answer tests run on a virtual learning environment, each taking approximately 30 minutes to complete.

[Total shall be Grade Mapped as a single mark]

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2

Report - Component B (First Sit)

Description: Practical Report (1000 words)

There are a number of lab activities over the course, one of which is to be selected for formal write-up as an end-of-course summative assessment.

Learners who feel they need to develop their information literacy and academic writing skills shall be given the opportunity to write up a test report for formative feedback, however they must select a different lab activity for the summative assessment.

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO3

Online Assignment - Component A (Resit)

Description: Online Tests (3 hours)

6 online tests, spread over a 3-day resit window.

These will mainly be multiple choice and short answer tests run on a virtual learning environment, each taking approximately 30 minutes to complete.

[Total shall be Grade Mapped as a single mark]

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2

Report - Component B (Resit)

Description: There are a number of lab activities over the course, one of which is to be selected for formal write-up as an end-of-course summative assessment.

Learners who feel they need to develop their information literacy and academic writing skills shall be given the opportunity to write up a test report for formative

feedback, however they must select a different lab activity for the summative assessment.

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study: