Module Specification

Materials and Environmental Physics

Version: 2025-26, v1.0, 19 Mar 2025

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Part 1: Information

Module title: Materials and Environmental Physics

Module code: UBLL6V-30-1

Level: Level 4

For implementation from: 2025-26

UWE credit rating: 30

ECTS credit rating: 15

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: Yes

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module combines diverse teaching methods to explore construction materials and internal building environments. Students investigate timber, masonry, steel, concrete, glass, plastics, and emerging materials, analysing their properties and uses. Practical experiments allow students to assess environmental factors such as light, acoustics, air quality, ventilation, thermal comfort, and heat flow, deepening their understanding of building performance. Tutorials provide interactive opportunities for questions and problem-solving, while lectures establish foundational

concepts. A rich suite of online resources supports independent study, offering flexibility in learning. The module emphasises connections between materials, comfort, health, energy, climate change, and carbon impacts, fostering sustainable design awareness.

Features: Not applicable

Educational aims: To explore the science behind construction materials and the physics associated with performance of internal environments.

Outline syllabus: Students will explore the properties and uses of the following construction materials: timber, masonry, steel, concrete, glass, plastics and emerging materials.
Using practical experimentations, students will examine aspects of internal building environments including light and lighting, noise and acoustics, air quality and ventilation, thermal comfort and heat flow. In doing so they will also see the relation to such topics as comfort and health, energy and climate change, operational and embodied carbon.

Part 3: Teaching and learning methods

Teaching and learning methods: Teaching Strategy for the Module

The subject is taught through a structured and diverse set of activities designed to enhance student understanding and engagement. The strategy includes the following components:

1. Introductory Lectures - A comprehensive set of lectures provide a foundational overview of the subject, establishing key concepts and objectives. These sessions serve as a starting point for deeper exploration through subsequent activities.

2. Interactive Tutorial - Tutorials are designed to foster engagement by encouraging questions, discussions, and problem-solving. These sessions allow students to clarify concepts and apply their knowledge in a collaborative setting.

3. Laboratory Experimentation - Hands-on learning is facilitated through laboratory-based experiments, where students utilise specialised lab facilities to test and analyse the physical parameters of the subject. This practical approach reinforces theoretical knowledge and develops technical skills.

4. Online Learning Resources - A rich suite of online learning materials supports students in their independent study. These resources include multimedia content, readings, interactive tools, and self-assessment opportunities, enabling students to learn at their own pace and in the manner that suits their individual preferences.

This multi-faceted teaching strategy ensures a well-rounded learning experience, combining theoretical understanding, practical application, and independent exploration to meet diverse learning needs.

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

MO1 Explore the physical properties of a wide range of materials and describe how they are used in construction.

MO2 Conduct common tests associated with the scientific performance of materials, using numerical techniques.

MO3 Explain the scientific principles underlying heat, humidity, light, sound, air quality and energy flow, and how each of these is influenced by different building materials.

MO4 Conduct a practical investigation of an aspect of a building’s internal environment and discuss how the results relate to human health, safety and comfort.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 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/70CCA055-F514-E22B-3E85-76F294B8308C.html?lang=en-GB&login=1

Part 4: Assessment

Assessment strategy: Assessment Strategy
The assessment strategy is designed to evaluate students' understanding of the material while supporting their development of study habits and academic skills. Many students may not have engaged in numerical learning since their GCSE exams, so the approach emphasises building confidence and competence. The module includes the following assessment components:

First Attempt Assessment
Task 1 – Portfolio
Students submit coursework on taught content throughout the module. This allows them to integrate knowledge from various topics, practice formal academic writing, enhance information literacy, and develop word processing skills.
Task 2 – Online Tests
A series of online tests follow each major topic. These tests are cumulative, with the results contributing to a single overall mark.

Second Attempt Assessment
Task 1 – Portfolio
Students rework the material asked for in the first attempt and provide a synoptic technical essay, covering all module topics.
Task 2 – Online Tests
Students complete a condensed series of online tests to the same standard as the first attempt.

Feedback Strategy
Formative feedback is provided on some short reports to help students understand the required standards and identify areas for improvement. Detailed written feedback

on submissions offers guidance for future development, particularly in study skills and information literacy. This feedback supports continuous improvement and prepares students for subsequent modules.
Online tests provide instant feedback on the level and marks achieved allowing students to target their revision of topics before taking additional attempts.

Assessment tasks:

Portfolio (First Sit)
Description: Task 1 - Portfolio (1500 words)
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO2

Online Assignment (First Sit)
Description: Task 2 - Online Tests
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO3, MO4

Portfolio (Resit)
Description: Task 1 - Portfolio (1500 words)
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO2

Online Assignment (Resit)
Description: Task 2 - Online Tests
Weighting: 50 %
Final assessment: Yes
Group work: No

Learning outcomes tested: MO1, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Architecture and Environmental Engineering [Frenchay] BEng (Hons) 2025-26