



## **Module Specification**

### **Construction Materials and Sustainability**

Version: 2024-25, v3.0, 17 Jul 2024

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## Part 1: Information

**Module title:** Construction Materials and Sustainability

**Module code:** UBGMY1-15-1

**Level:** Level 4

**For implementation from:** 2024-25

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

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

**School:** CATE School of Engineering

**Partner institutions:** None

**Field:** Geography and Environmental Management

**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:** The Construction Materials and Sustainability module is designed to provide an in-depth understanding of the relationship between construction materials and sustainable building practices. Students will explore the environmental impact of various construction materials, including their production, transportation, and disposal. The module will cover the latest sustainable materials and technologies, such as recycled materials, biodegradable materials, and low-carbon alternatives, and their application in different construction projects.

**Features:** Key points about this module:

1. Focus on emerging construction material
2. Hands-on learning opportunities
3. Emphasis on global issues due to the production and consumption of various construction material
- 4: Sustainable alternatives of construction material.

**Educational aims:** MO1 Understand the mechanical and physical properties of construction materials.

MO2 Assess the engineering properties of construction materials through laboratory testing , data analysis and a review of literature.

MO3 Evaluate materials in relation to their environmental impact and sustainability.

MO4 Select appropriate materials for engineering applications

The Construction Materials and Sustainability module provides a unique and comprehensive approach to understanding the role of construction materials in sustainable building practices and prepares students to be leaders in this rapidly growing field.

**Outline syllabus:** The module will cover the mechanical and physical properties, sustainability and environmental aspects of a range of construction materials, including:

Concrete

Masonry

Steel (including carbon, stainless and weathering steel; high tensile steel; welding and fatigue; corrosion protection)

Timber

Glass

Bitumen

## Polymers and emerging materials

You will also cover the associated testing procedures and specifications and the appropriate use of materials in engineering applications, And sustainable alternatives to all the materials will also be covered in this module

### Part 3: Teaching and learning methods

**Teaching and learning methods:** The module will be taught through lectures, introducing the principal concepts and theories, which are then expanded on through practical laboratory sessions.

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

**MO1** Understand the mechanical and physical properties of construction materials.

**MO2** Assess the engineering properties of construction materials through laboratory testing , data analysis and a review of literature.

**MO3** Evaluate materials in relation to their environmental impact and sustainability.

**MO4** Select appropriate materials for engineering applications.

**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](https://uwe.rl.talis.com/modules/ubgmy9-15-1.html) via the following link <https://uwe.rl.talis.com/modules/ubgmy9-15-1.html>

## Part 4: Assessment

**Assessment strategy:** The assessment for this course is comprised of two tasks. The first task is to create a portfolio of lab reports, which is intended to evaluate students' ability to analyse and interpret the engineering properties of construction materials based on laboratory testing. This task will carry a weight of 25% in the overall assessment and will assess learning outcomes MO2.

The second task is an examination, which will be used to gauge students' comprehension of construction materials and their associated properties, as well as their ability to evaluate and select appropriate construction materials for engineering applications for a sustainable built environment. This task will carry a weight of 75% in the overall assessment and will assess learning outcomes MO1, MO3, and MO4.

Resit is the same as the first sit.

### Assessment tasks:

#### Portfolio (First Sit)

Description: Portfolio of lab reports

Students complete the laboratory workbook. Students complete all the reading and graphs and reflect on their observation and interpretation of the material properties.

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2

#### Examination (First Sit)

Description: The written examination (2 hours) will consist of set of questions that will gauge students' comprehension of construction materials and their associated properties, as well as their ability to evaluate and select appropriate construction materials for engineering applications for a sustainable built environment

Weighting: 75 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3, MO4

**Portfolio (Resit)**

Description: Portfolio of lab reports

Students complete the laboratory workbook. complete all the reading and graphs and reflect on their observation and interpretation of the material properties.

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2

**Examination (Resit)**

Description: The written examination (2 hours) will consist of set of questions that will gauge students' comprehension of construction materials and their associated properties, as well as their ability to evaluate and select appropriate construction materials for engineering applications for a sustainable built environment

Weighting: 75 %

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:

Civil Engineering [Frenchay] BEng (Hons) 2024-25

Civil Engineering [Frenchay] BEng (Hons) 2024-25

Civil Engineering [Frenchay] MEng 2024-25

Civil Engineering [Frenchay] MEng 2024-25

Civil Engineering {Apprenticeship-UWE} [Frenchay] BEng (Hons) 2024-25

Civil Engineering [Frenchay] BEng (Hons) 2024-25

Civil Engineering [Frenchay] BEng (Hons) 2024-25

Civil Engineering {Apprenticeship-UWE} [Frenchay] BEng (Hons) 2024-25

Civil Engineering [Frenchay] MEng 2024-25