Module Specification

Advanced Construction Materials and Technology

Version: 2023-24, v7.0, 21 Mar 2023

Contents

Part 1: Information

Module title: Advanced Construction Materials and Technology

Module code: UBGMSR-15-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Geography & Envrnmental Mgmt

Partner institutions: None

Field: Geography and Environmental Management

Module type: Standard

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: In this module you will examine the analysis of non-linear behaviour of structures.

Features: Not applicable

Educational aims: See Learning Outcomes.

Outline syllabus: You will cover:

Fracture mechanics and fatigue behaviour of materials.

Time dependent and non-linear behaviour materials e.g. relaxation, shrinkage and creep.

Innovations and sustainable concrete, e.g. high-strength concrete, 3D concrete printing.

Innovations and applications in metals, e.g. shape-memory alloys.

Application and adaptation of traditional masonry into contemporary smart construction.

Timber as sustainable construction material, e.g. use of bamboo as a replacement for steel in reinforced concrete.

Composites as alternatives for steel and structural retrofitting.

Discussion of the above topics will include consideration of the lifecycle impacts and sustainability of the material selection and design choices made by the engineer.

Part 3: Teaching and learning methods

Teaching and learning methods: See Assessment.

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

MO1 Interpret forms of fracture and fatigue, and time dependent and non-linear behaviour of materials

MO2 Assess advanced characteristics and properties of construction materials

MO3 Assess the prospects for alternatives and recycled waste materials for traditional civil infrastructure applications

MO4 Evaluate the sustainability of materials for civil engineering applications

MO5 Identify and evaluate leading innovations in common civil engineering materials and opportunities for adapting advanced materials for use in civil engineering applications

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ubgmsr-15-m.html

Part 4: Assessment

Assessment strategy: Exam (4 hours)

Report
3000 words report based on laboratory sessions and exploring innovations in the field of construction materials

Assessment tasks:

Examination (Online) (First Sit)
Description: Online Examination (4 hours)
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Report (First Sit)

Description: Report (3000 words)
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO3, MO4, MO5

Examination (Online) (Resit)
Description: Online Examination (4 hours)
Weighting: 50 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Report (Resit)
Description: Report (3000 words)
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO3, MO4, MO5

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Civil Engineering [Frenchay] MSc 2023-24

Civil Engineering [Frenchay] MSc 2023-24

Civil and Environmental Engineering [Sep][FT][Frenchay][4yrs] - Not Running MEng 2020-21

Civil Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21

Civil and Environmental Engineering [Sep][SW][Frenchay][5yrs] MEng 2019-20

Civil and Environmental Engineering [Sep][PT][Frenchay][7yrs] MEng 2018-19