



Module Specification

Design of Structural Elements

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Part 1: Information

Module title: Design of Structural Elements

Module code: UBGMS7-15-3

Level: Level 6

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Geography & Environmental Mgmt

Partner institutions: None

Field: Geography and Environmental Management

Module type: Module

Pre-requisites: Structural Design and Soil Mechanics 2023-24

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes.

Outline syllabus: The syllabus includes:

Reinforced Concrete:

Introduction to reinforced concrete within multi-storey buildings

Preliminary design concepts for reinforced concrete

Design of concrete slabs, beams, columns (short or slender), bases, staircases, walls, flat slabs, redistribution of moments, robustness

Detailing aspects of concrete members

Structural Steel Members:

Types of loads, their effects and load paths.

Properties of steel in relation to design.

Design of steel members subject to tension, compression and bending.

Design failures of steel elements.

Part 3: Teaching and learning methods

Teaching and learning methods: The module will be delivered by means of a series of lectures, tutorials and laboratory classes. The laboratory experiments will be used to reinforce principles, engender a scientific approach to practical investigative work, and give students an appreciation of the role of experimentation in structural design theory and research.

Scheduled learning includes lectures, seminars, tutorials, project supervision, demonstration, practical classes and workshops; fieldwork; external visits; work based learning; supervised time in studio/workshop.

Independent learning includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc.

Contact Hours:

Student time will be allocated as follows:

Lectures: 48 hours

Tutorials: 12 hours

Summative assessment: 43 hours

Directed learning: 6 hrs

Self directed learning: 41 hours

Total student hours: 150 hours

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

MO1 Design reinforced concrete elements for medium rise buildings

MO2 Design steel members in civil engineering structures

MO3 Demonstrate critical understanding, use and application of technical design standards and other information sources

MO4 Convey complex information in the form of structural design calculations

MO5 Produce detailed structural drawings based on design notes and sketches

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 41 hours

Face-to-face learning = 109 hours

Total = 150

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

Part 4: Assessment

Assessment strategy: The strategy has been chosen to ensure that fundamental engineering principles are assessed under controlled conditions, while a more open ended research based assignments are used to encourage wider engagement and reflection on this topic.

Summative assessment comprises a 2.5 hr examination for Assessment Task 1 and

two assignments for Assessment Task 2.

Coursework Assignments:

Two assignments of 2000 words each will cover structural design of reinforced concrete and steel structures respectively. Students are thoroughly assessed in learning outcomes 3-5 using these two assignments.

Examination:

The examination will cover the module syllabus as a whole, pulling together the individual learning outcomes 1-4. An open book format will be used to allow reference to appropriate codes and standards.

Formative assessment opportunities will be provided through four tutorial sessions and students are advised to attend all these tutorial sessions.

Assessment tasks:

Examination (First Sit)

Description: Examination (150 minutes)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Written Assignment (First Sit)

Description: Assignment 1 (concrete elements) 2000 words

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO3, MO4, MO5

Written Assignment (First Sit)

Description: Assignment 2 (steel elements) 2000 words

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO4, MO5

Examination (Resit)

Description: Examination (150 minutes)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

Written Assignment (Resit)

Description: Assignment 1 (concrete elements) 2000 words

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested:

Written Assignment (Resit)

Description: Assignment 2 (steel elements) 2000 words

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Civil Engineering [Jan][FT][Northshore][4yrs] - Not Running MEng 2021-22

Civil Engineering [Jan][FT][Northshore][3yrs] - Not Running BEng (Hons) 2021-22