



Module Specification

Design of Structural Elements

Version: 2021-22, v3.0, 19 Jul 2021

Contents

Module Specification	1
Part 1: Information	2
Part 2: Description	2
Part 3: Teaching and learning methods	3
Part 4: Assessment.....	4
Part 5: Contributes towards	6

Part 1: Information

Module title: Design of Structural Elements

Module code: UBGMVQ-15-2

Level: Level 5

For implementation from: 2021-22

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Geography & Environmental Mgmt

Partner institutions: None

Delivery locations: Frenchay Campus

Field: Geography and Environmental Management

Module type: Project

Pre-requisites: Mathematics for Civil and Environmental Engineering 2021-22

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module will introduce students to the scheme design of structural elements in reinforced concrete, steel and masonry. The design procedures introduced will use standard codes of practice.

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: Students will cover:

Behaviour of structural elements under loading.

Principles of permanent, variable and wind loads on structures.

Partial safety factor and limit state design principles.

Material properties of structural steel, reinforced concrete and masonry.

Design of structural steel beams and columns.

The principles of laterally unrestrained and composite beam design.

Design of reinforced concrete elements in flexure and shear.

Principles of flanged beam and slab design for reinforced concrete.

Design of basic reinforced concrete columns.

Principles of reinforcement detailing.

Design of basic vertically loaded masonry walls.

Principles of design of laterally loaded masonry walls.

Part 3: Teaching and learning methods

Teaching and learning methods: The theory and concepts will be taught via lecture and supported with tutorial sessions. Directed independent learning, in the form of tutorial sheets, will be used to aid student development.

Module Learning outcomes:

MO1 Select appropriate engineering properties for structural design in a range of materials

MO2 Design basic reinforced concrete elements

MO3 Design basic structural steel elements

MO4 Design basic masonry elements

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](https://uwe.rl.talis.com/modules/ubgmvg-15-2.html) via the following link <https://uwe.rl.talis.com/modules/ubgmvg-15-2.html>

Part 4: Assessment

Assessment strategy: The assessment strategy for the module requires students to take a portfolio. The portfolio will be open-book in format with students being allowed to use in certain authorised materials that will be sequentially developed through the tutorials.

The portfolio will test knowledge around the design and application of concrete, steel and masonry-based interventions. For each, students will be required to calculate solutions to specific design problems.

Formative feedback will be provided through the tutorial sessions, based around the weekly tutorial exercises set. These exercises will prepare the students for the portfolio.

The resit to Component A will require students to take a similarly structured open-book portfolio.

Assessment components:

Portfolio - Component A (First Sit)

Description: Portfolio (1,500 words)

This portfolio will cover:

Select appropriate engineering properties for structural design in a range of materials

Design basic reinforced concrete elements

Design basic structural steel elements

Design basic masonry elements

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Portfolio - Component A (Resit)

Description: Portfolio (1500 words)

This portfolio will cover:

Select appropriate engineering properties for structural design in a range of materials

Design basic reinforced concrete elements

Design basic structural steel elements

Design basic masonry elements

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Civil and Environmental Engineering [Sep][SW][Frenchay][5yrs] MEng 2020-21

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

Civil and Environmental Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2020-21

Civil Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2020-21

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

Civil Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2020-21

Civil Engineering [Sep][SW][Frenchay][5yrs] MEng 2020-21

Civil and Environmental Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2020-21

Civil and Environmental Engineering [Sep][PT][Frenchay][5yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering {Apprenticeship-UWE}
[Sep][FT][Frenchay][5yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering [Sep][PT][Frenchay][7yrs] MEng 2019-20