



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Design of Structural Elements		
Module Code	UBGMVQ-15-2	Level	Level 5
For implementation from	2020-21		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Geography and Environmental Management
Department	FET Dept of Geography & Environmental Mgmt		
Module type:	Project		
Pre-requisites	Mathematics for Civil and Environmental Engineering 2020-21		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Overview:</b> 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.</p> <p><b>Educational Aims:</b> See Learning Outcomes</p> <p><b>Outline Syllabus:</b> Students will cover:</p> <p>Behaviour of structural elements under loading.</p> <p>Principles of permanent, variable and wind loads on structures.</p> <p>Partial safety factor and limit state design principles.</p> <p>Material properties of structural steel, reinforced concrete and masonry.</p> <p>Design of structural steel beams and columns.</p> <p>The principles of laterally unrestrained and composite beam design.</p>

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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.

**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.

### Part 3: Assessment

The assessment strategy for the module requires students to take a n unseen examination. The examination will be open-book in format with students being allowed to bring in certain authorised materials that will be sequentially developed through the tutorials.

The examination 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 examination.

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

First Sit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	100 %	Online Examination
Resit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	100 %	online Examination

### Part 4: Teaching and Learning Methods

Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:	
	<b>Module Learning Outcomes</b>	<b>Reference</b>
	Select appropriate engineering properties for structural design in a range of materials	MO1
	Design basic reinforced concrete elements	MO2
	Design basic structural steel elements and connections	MO3
	Design basic masonry elements	MO4
Contact Hours	<b>Independent Study Hours:</b>	

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	Independent study/self-guided study	114
	<b>Total Independent Study Hours:</b>	114
	<b>Scheduled Learning and Teaching Hours:</b>	
	Face-to-face learning	36
	<b>Total Scheduled Learning and Teaching Hours:</b>	36
	<b>Hours to be allocated</b>	150
	<b>Allocated Hours</b>	150
Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p><a href="https://uwe.rl.talis.com/modules/ubgmvq-15-2.html">https://uwe.rl.talis.com/modules/ubgmvq-15-2.html</a></p>	

### Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Civil and Environmental Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2018-19

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

Civil and Environmental Engineering {Apprenticeship} [Sep][PT][Frenchay][5yrs] BEng (Hons) 2018-19

Civil and Environmental Engineering [Sep][PT][Frenchay][5yrs] BEng (Hons) 2018-19

Civil and Environmental Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19