



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Design of Structural Elements		
Module Code	UBGMVQ-15-2	Level	Level 5
For implementation from	2018-19		
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		
Contributes towards			
Module type:	Project		
Pre-requisites	Engineering Principles for Civil Engineering 2018-19, Mathematics for Civil and Environmental Engineering 2018-19		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Overview:</b> This module will introduce you 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> You 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>

## STUDENT AND ACADEMIC SERVICES

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.

**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 comprises three coursework tasks that allow the students to demonstrate the learning outcomes as applied to realistic design problems. The use of coursework allows the students to carry out design iterations which are not possible during an examination. This will allow the student to explore alternative design solutions and produce designs that meet a more complex set of requirements than possible in an examination.

Component A1 – Concrete design problem. Learning outcomes 1 and 2

Students are required to solve a concrete design problem and submit engineering calculations demonstrating the solution. The problem can be generated with unique parameters for each student. Equivalent to 1500 words.

Component A2 – Steel design problem. Learning outcomes 1 and 3

Students are required to solve a steel design problem and submit engineering calculations demonstrating the solution. The problem can be generated with unique parameters for each student. Equivalent to 1500 words.

Component A3 – Masonry design problem. Learning outcomes 1 and 4

Students are required to solve a masonry design problem and submit engineering calculations demonstrating the solution. The problem can be generated with unique parameters for each student. Equivalent to 1000 words.

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

First Sit Components	Final Assessment	Element weighting	Description
Written Assignment - Component A	✓	40 %	Concrete design problem (1500 words)
Written Assignment - Component A		40 %	Steel design problem (1500 words)
Written Assignment - Component A		20 %	Masonry design problem (1000 words)
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<b>Part 4: Teaching and Learning Methods</b>																			
Learning Outcomes	<p>On successful completion of this module students will be able to:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th colspan="2" style="text-align: center;"><b>Module Learning Outcomes</b></th> </tr> </thead> <tbody> <tr> <td>MO1</td> <td>Select appropriate engineering properties for structural design in a range of materials</td> </tr> <tr> <td>MO2</td> <td>Design basic reinforced concrete elements</td> </tr> <tr> <td>MO3</td> <td>Design basic structural steel elements and connections</td> </tr> <tr> <td>MO4</td> <td>Design basic masonry elements</td> </tr> </tbody> </table>	<b>Module Learning Outcomes</b>		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 and connections	MO4	Design basic masonry elements								
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Reading List	<p>The reading list for this module can be accessed via the following link:</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>																		