



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Non Linear Structural Analysis		
Module Code	UBGMUA-15-M	Level	Level 7
For implementation from	2021-22		
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:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co-requisites	None		
Module Entry Requirements	None		
PSRB Requirements	None		

Part 2: Description
<p><b>Overview:</b> In this module, you will examine the analysis of non-linear behaviour of structures.</p> <p><b>Educational Aims:</b> See Learning Outcomes</p> <p><b>Outline Syllabus:</b> The module will cover:</p> <p>Geometric non-linearity, buckling and geometric stiffness.</p> <p>Equilibrium paths.</p> <p>P-delta effects.</p> <p>Material non-linearity.</p> <p>Inelastic buckling.</p> <p>Numerical solutions for non-linear structural analysis.</p>

## STUDENT AND ACADEMIC SERVICES

Non-linear dynamic response of structures.

Capacity design principles for earthquake engineering.

**Teaching and Learning Methods:** See Assessment.

### Part 3: Assessment

Component A: Report (3000 words excluding appendices and references).

A coursework submission to demonstrate the ability to use numerical modelling to analyse and design a structure under complex loading that includes earthquakes. The report must show ability to present the design outcomes in professional drawings and sketches.

Resit strategy: Students will submit a report which will be a variation agreed with the module leader.

First Sit Components	Final Assessment	Element weighting	Description
Report - Component A		100 %	Coursework (3000 words report, excluding appendices and references).
Resit Components	Final Assessment	Element weighting	Description
Report - Component A		100 %	Coursework (3000 words report, excluding appendices and references)

### 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>
	Identify when geometric and material non linearity may be important for structural systems.	MO1
	Calculate the geometric stiffness of discrete systems.	MO2
	Calculate the non-linear response of simple structural systems.	MO3
	Use non-linear finite element analysis to design complex structures taking into consideration health and safety issues during design stage.	MO4
	Use material and geometric non linearity to assess structures subject to dynamic loads.	MO5
Contact Hours	<b>Independent Study Hours:</b>	
	Independent study/self-guided study	114
	<b>Total Independent Study Hours:</b>	114
	<b>Scheduled Learning and Teaching Hours:</b>	

## STUDENT AND ACADEMIC SERVICES

	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/ubgmua-15-m.html">https://uwe.rl.talis.com/modules/ubgmua-15-m.html</a></p>	

### Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Civil and Environmental Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19