MODULE SPECIFICATION

Part 1: Information			
Module Title	Non Linear Structural Analysis		
Module Code	UBGMUA-15-M	Level	Level 7
For implementation from	2019-20		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Geography and Environmental Management
Department	FET Dept of Geography & Envrnmental Mgmt		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

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

Capacity design principles for earthquake engineering.

Teaching and Learning Methods: See Assessment.

Part 3: Assessment			
Component A: Written examination (2 hours). Learning outcomes 1, 2, 3 and 5. A written examination allows for the effective assessment of the individual student's ability to demonstrate the learning applications, as applied to technical problems. Formative support will be provided through the module via tutorial sheets and timetabled tutorial sessions. Component B: Report (1000 words excluding appendices and references) Learning outcome 4. 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.			
First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Report - Component B		30 %	Coursework (1000 words report, excluding appendices and references).
Examination - Component A	✓	70 %	Examination (2 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Report - Component B		30 %	Coursework (1000 words report, excluding appendices and references)
Examination - Component A	✓	70 %	Examination (2 hours)

Part 4: Teaching and Learning Methods

Learning Outcomes

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

Module Learning Outcomes	Reference
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

Independent Study Hours:	
Independent study/self-guided study	114
Total Independent Study Hours:	114
Scheduled Learning and Teaching Hours:	
Face-to-face learning	36
Total Scheduled Learning and Teaching Hours:	36
Hours to be allocated	150
Allocated Hours	150

Reading List

The reading list for this module can be accessed via the following link:

https://uwe.rl.talis.com/modules/ubgmua-15-m.html

Part 5: Contributes Towards

This module contributes towards the following programmes of study: