



MODULE SPECIFICATION

Part 1: Information			
Module Title	Structural Analysis and Geotechnics (cee)		
Module Code	UBGMHA-30-3	Level	Level 6
For implementation from	2018-19		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Environment & Technology	Field	Geography and Environmental Management
Department	FET Dept of Geography & Environmental Mgmt		
Contributes towards			
Module type:	Standard		
Pre-requisites	Structural Design and Soil Mechanics 2018-19		
Excluded Combinations	None		
Co- requisites	Applications of Mathematics in Civil and Environmental Engineering 2018-19		
Module Entry requirements	None		

Part 2: Description
<p>Overview: Pre-requisites 30 credits at Level 2 to include: UBGMJD-30-2 Structural Design and Soil Mechanics</p> <p>Features: Module entry requirements: 30 credits at Level 2</p> <p>Educational Aims: In addition to the learning outcomes, in this module students will develop the necessary knowledge, understanding and skills to analyse and solve problems relating to multi-variable structural systems of both statically determinate and indeterminate structure types. The ground engineering part provides a basis for interpreting ground conditions and analysing a range of problems related to both hard and soft solutions. There is an emphasis on decision making based on an understanding of uncertainty and risk throughout the asset lifecycle.</p> <p>Outline Syllabus: The syllabus includes:</p> <p>Internal loading functions: moment and shear functions.</p> <p>Deflection calculations of beams and trusses (e.g. virtual work method).</p>

STUDENT AND ACADEMIC SERVICES

Elastic analysis of statically indeterminate structures (e.g. moment distribution method).

Plastic analysis to calculate collapse loads of beams and frames.

Influence line of beams and trusses.

Arch Analysis.

Qualitative analysis and the use of computer software.

Site investigation design and planning, phases; site reports; obtaining/extracting engineering data.

Bearing capacity and settlement of foundations.

Slope stability and preliminary design of earth embankment dam.

Design of gravity and embedded earth and water retaining walls.

Teaching and Learning Methods: This module will be delivered through lecture sessions aimed at establishing the discipline context, key definitions/concepts, and also at establishing a framework for learning. The lectures will be supported by e-learning using computer-based learning exercises. Scheduled learning also includes a number of practical and field work sessions aimed at skills development. Through these mechanisms learners will also build upon the fundamental concepts covered in the lectures and start applying new understanding through the tasks and activities provided. Regular formative feedback is built into the weekly contact sessions.

Contact Hours:

On average students will receive 3 hours of contact time per week. This will be in a range of formats, including lectures, laboratory practicals, field work, tutorial or computer-based sessions, formative feedback sessions and support via e-mail.

The amount of time spent on activities in this module is shown below:

Activity:

Contact time (lectures/feedback/practical sessions): 72

Assimilation and development of knowledge: 168

Coursework preparation: 60

Total study time: 300

Part 3: Assessment

Component A - Examination. Learning outcomes 1,2,3, 4 and 5.

Exam (3 hours) on structural analysis.

Component B – Examination. Learning outcomes 6, 7 and 8.

Exam (3 hours) on geotechnics

First Sit Components	Final Assessment	Element weighting	Description
Examination - Component B		50 %	Examination (3 hours)

STUDENT AND ACADEMIC SERVICES

Examination - Component A	✓	50 %	Examination (3 hours)
Resit Components	Final Assessment	Element weighting	Description
Examination - Component B		50 %	Examination (3 hours)
Examination - Component A	✓	50 %	Examination (3 hours)

Part 4: Teaching and Learning Methods																			
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;">Module Learning Outcomes</th> </tr> </thead> <tbody> <tr> <td>MO1</td> <td>Understand the key difference between determinate and indeterminate structures and between plastic and elastic analysis with reference to equilibrium, compatibility and material properties</td> </tr> <tr> <td>MO2</td> <td>Use qualitative methods to analyse determinate and indeterminate structures elastically</td> </tr> <tr> <td>MO3</td> <td>Use quantitative methods to analyse determinate and indeterminate structures elastically</td> </tr> <tr> <td>MO4</td> <td>Use plastic methods to analyse determinate and indeterminate structures</td> </tr> <tr> <td>MO5</td> <td>Analyse the effect of moving loads on beams and trusses</td> </tr> <tr> <td>MO6</td> <td>Apply soil mechanics to the analysis and design of foundations (deep and shallow), earth retaining structures and embankments</td> </tr> <tr> <td>MO7</td> <td>Recognise the nature of uncertainty in geotechnical engineering and adopt appropriate strategies to deal with uncertainty</td> </tr> <tr> <td>MO8</td> <td>Apply understandings of site investigation, laboratory and in-situ testing to the development of a Geotechnical Design Report</td> </tr> </tbody> </table>	Module Learning Outcomes		MO1	Understand the key difference between determinate and indeterminate structures and between plastic and elastic analysis with reference to equilibrium, compatibility and material properties	MO2	Use qualitative methods to analyse determinate and indeterminate structures elastically	MO3	Use quantitative methods to analyse determinate and indeterminate structures elastically	MO4	Use plastic methods to analyse determinate and indeterminate structures	MO5	Analyse the effect of moving loads on beams and trusses	MO6	Apply soil mechanics to the analysis and design of foundations (deep and shallow), earth retaining structures and embankments	MO7	Recognise the nature of uncertainty in geotechnical engineering and adopt appropriate strategies to deal with uncertainty	MO8	Apply understandings of site investigation, laboratory and in-situ testing to the development of a Geotechnical Design Report
Module Learning Outcomes																			
MO1	Understand the key difference between determinate and indeterminate structures and between plastic and elastic analysis with reference to equilibrium, compatibility and material properties																		
MO2	Use qualitative methods to analyse determinate and indeterminate structures elastically																		
MO3	Use quantitative methods to analyse determinate and indeterminate structures elastically																		
MO4	Use plastic methods to analyse determinate and indeterminate structures																		
MO5	Analyse the effect of moving loads on beams and trusses																		
MO6	Apply soil mechanics to the analysis and design of foundations (deep and shallow), earth retaining structures and embankments																		
MO7	Recognise the nature of uncertainty in geotechnical engineering and adopt appropriate strategies to deal with uncertainty																		
MO8	Apply understandings of site investigation, laboratory and in-situ testing to the development of a Geotechnical Design Report																		
Contact Hours	<table border="1" style="width: 100%;"> <thead> <tr> <th colspan="2" style="text-align: center;">Contact Hours</th> </tr> </thead> <tbody> <tr> <td colspan="2" style="height: 20px;"> </td> </tr> <tr> <td colspan="2">Independent Study Hours:</td> </tr> <tr> <td style="text-align: center;">Independent study/self-guided study</td> <td style="text-align: center;">228</td> </tr> <tr> <td style="text-align: center;">Total Independent Study Hours:</td> <td style="text-align: center;">228</td> </tr> <tr> <td colspan="2">Scheduled Learning and Teaching Hours:</td> </tr> <tr> <td style="text-align: center;">Face-to-face learning</td> <td style="text-align: center;">72</td> </tr> <tr> <td style="text-align: center;">Total Scheduled Learning and Teaching Hours:</td> <td style="text-align: center;">72</td> </tr> <tr> <td style="text-align: center;">Hours to be allocated</td> <td style="text-align: center;">300</td> </tr> </tbody> </table>	Contact Hours				Independent Study Hours:		Independent study/self-guided study	228	Total Independent Study Hours:	228	Scheduled Learning and Teaching Hours:		Face-to-face learning	72	Total Scheduled Learning and Teaching Hours:	72	Hours to be allocated	300
Contact Hours																			
Independent Study Hours:																			
Independent study/self-guided study	228																		
Total Independent Study Hours:	228																		
Scheduled Learning and Teaching Hours:																			
Face-to-face learning	72																		
Total Scheduled Learning and Teaching Hours:	72																		
Hours to be allocated	300																		

STUDENT AND ACADEMIC SERVICES

	Allocated Hours	300
Reading List	<i>The reading list for this module can be accessed via the following link:</i> https://uwe.rl.talis.com/modules/ubgmha-30-3.html	