



Module Specification

Structural Analysis and Geotechnics (cee)

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Part 1: Information

Module title: Structural Analysis and Geotechnics (cee)

Module code: UBGMHA-30-3

Level: Level 6

For implementation from: 2023-24

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Geography & Environmental Mgmt

Partner institutions: None

Field: Geography and Environmental Management

Module type: Module

Pre-requisites: Structural Design and Soil Mechanics 2023-24

Excluded combinations: None

Co-requisites: Applications of Mathematics in Civil and Environmental Engineering 2023-24

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Pre-requisites 30 credits at Level 2 to include: UBGMJJD-30-2 Structural Design and Soil Mechanics

Features: Module entry requirements: 30 credits at Level 2

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.

Outline syllabus: The syllabus includes:

Internal loading functions: moment and shear functions.

Deflection calculations of beams and trusses (e.g. virtual work method).

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.

Part 3: Teaching and learning methods

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

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

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ubgmha-30-3.html) via the following link <https://uwe.rl.talis.com/modules/ubgmha-30-3.html>

Part 4: Assessment

Assessment strategy: Examination. Learning outcomes 1,2,3, 4 and 5.

Exam (3 hours) on structural analysis.

Examination 2. Learning outcomes 6, 7 and 8.

Exam (3 hours) on geotechnics

Assessment tasks:

Examination (First Sit)

Description: Examination (3 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Examination (First Sit)

Description: Examination 2 (3 hours)

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO6, MO7, MO8

Examination (Resit)

Description: Examination (3 hours)

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

Examination (Resit)

Description: Examination 2 (3 hours)

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Civil Engineering [Jan][FT][Northshore][4yrs] - Not Running MEng 2021-22

Civil Engineering [Jan][FT][Northshore][3yrs] - Not Running BEng (Hons) 2021-22