



Module Specification

Geotechnics

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Part 1: Information

Module title: Geotechnics

Module code: UBGMWQ-15-3

Level: Level 6

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Engineering

Partner institutions: None

Field: Geography and Environmental Management

Module type: Module

Pre-requisites: Soil Mechanics 2022-23

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: In this module you will develop a basis for interpreting ground conditions for the analysis and design of geotechnical structures. There is an emphasis on decision-making based on understanding uncertainty and risk associated with geotechnical design.

Outline syllabus: You will cover:

Principles for design and planning of site investigations.

Interpretation of site investigation reports to extract engineering data.

Bearing capacity for piles and shallow foundations.

Settlement of shallow foundations.

Slope stability analysis of natural and engineered slopes (e.g. embankment dams).

Active and passive lateral earth pressures.

Geotechnical design of gravity, reinforced concrete and embedded retaining walls.

Part 3: Teaching and learning methods

Teaching and learning methods: The module will be taught using a combination of lectures and tutorials. Directed independent learning tasks will be used to help students develop through the module and prepare for the coursework.

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

MO1 Apply soil mechanics to the analysis and geotechnical design of foundations (deep and shallow) and earth retaining structures

MO2 Analyse the stability of slopes

MO3 Identify possibilities of uncertainty in geotechnical engineering and adopt appropriate strategies to deal with uncertainty

MO4 Apply understanding of site investigation, laboratory and in-situ testing to the development of a Geotechnical Design Report

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

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

Part 4: Assessment

Assessment strategy: Assessment Task 1 – Online Examination:

Exam . The examination allows individual assessment of application of theory to a wide range of classical geotechnical problems.

Assessment Task 2 – Site investigation design problem (1000 words):

A geotechnical design report on a design problem related to the design of site investigation works for a specific geotechnical project. The use of a design problem allows students to explore the topic in more detail and produce output more closely align with professional practice in the form of a design report, and synthesis data from a range of sources.

Assessment Task 3 – Embankment design problem (1000 words):

A geotechnical design report on a design problem related to a specific embankment, requiring slope stability analysis. The use of a design problem allows students to apply theory to a realistic design problem and through iteration and optimisation develop an awareness of how design needs and constraints affect the solution. Unique design input data can be generated for each student individually.

Formative feedback will be provided on tutorial exercises during timetabled sessions.

The tutorial exercise prepare the students to undertake the design problems, and support learning for the examination.

The resit strategy for this module is the same as for the first sit.

Assessment tasks:

Examination (Online) (First Sit)

Description: Online Examination: 4 hours + 2 hours for submission

Weighting: 60 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3

Professional Practice Report (First Sit)

Description: Report 1: Site investigation design problem (1000 words)

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4

Professional Practice Report (First Sit)

Description: Slope stability design problem (1000 words)

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2

Examination (Online) (Resit)

Description: Online Examination: 4 hours + 2 hours for submission

Weighting: 60 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3

Professional Practice Report (Resit)

Description: Report 1: Site investigation design problem (1000 words)

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4

Professional Practice Report (Resit)

Description: Report 2: Slope stability design problem (1000 words)

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Civil Engineering [Sep][FT][Frenchay][4yrs] MEng 2021-22

Civil and Environmental Engineering [Sep][FT][Frenchay][3yrs] - Not Running BEng (Hons) 2021-22

Civil Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2021-22

Civil and Environmental Engineering [Sep][SW][Frenchay][5yrs] - Not Running MEng 2020-21

Civil and Environmental Engineering [Sep][SW][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Civil and Environmental Engineering {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BEng (Hons) 2020-21

Civil Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2020-21

Civil Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2020-21

Civil Engineering [Sep][SW][Frenchay][5yrs] MEng 2020-21

Civil and Environmental Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering {Apprenticeship-UWE} [Sep][FT][Frenchay][5yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering [Sep][PT][Frenchay][5yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering [Sep][PT][Frenchay][7yrs] MEng 2019-20