



## **Module Specification**

### **Geotechnics**

Version: 2021-22, v3.0, 25 Apr 2022

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## Part 1: Information

**Module title:** Geotechnics

**Module code:** UBGMWQ-15-3

**Level:** Level 6

**For implementation from:** 2021-22

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**Faculty:** Faculty of Environment & Technology

**Department:** FET Dept of Geography & Environmental Mgmt

**Partner institutions:** None

**Delivery locations:** Frenchay Campus

**Field:** Geography and Environmental Management

**Module type:** Standard

**Pre-requisites:** Soil Mechanics 2020-21

**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:** Component A – Online Examination:

Exam (24 hours). The examination allows individual assessment of application of theory to a wide range of classical geotechnical problems.

Component B1 – 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.

Component B2 – 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.

**Assessment components:**

**Examination (Online) - Component A (First Sit)**

Description: Online Examination: 6 hours

Weighting: 60 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3

**Professional Practice Report - Component B (First Sit)**

Description: Site investigation design problem (1000 words)

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4

**Professional Practice Report - Component B (First Sit)**

Description: Slope stability design problem (1000 words)

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2

**Examination (Online) - Component A (Resit)**

Description: Online Examination: 6 hours

Weighting: 60 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO3

**Professional Practice Report - Component B (Resit)**

Description: Site investigation design problem (1000 words)

Weighting: 20 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4

**Professional Practice Report - Component B (Resit)**

Description: 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 and Environmental Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2019-20

Civil and Environmental Engineering [Sep][FT][Frenchay][4yrs] MEng 2019-20

Civil and Environmental Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19

Civil and Environmental Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19

Civil and Environmental Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2018-19