

# ES3G4-15 Geotechnical Engineering II

**22/23**

**Department**

School of Engineering

**Level**

Undergraduate Level 2

**Module leader**

Xueyu Geng

**Credit value**

15

**Module duration**

24 weeks

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

ES3G4-15 - Geotechnical Engineering II

[Module web page](#)

### Module aims

This module will introduce students to the analyses used in the design of gravity, embedded and reinforced soil retaining walls, simple shallow and deep foundations, the assessment of slope stability and slope stabilisation schemes. It will build on the basic concepts of soil mechanics introduced in Geotechnical Engineering I.

### Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Bearing capacity of shallow and deep footings

Settlement of structures

Tolerance limits of settlement

Lateral pressures on retaining structures

Design of anchors and anchorages

Stability of earth-retaining structures; Reinforced soil

Classification & Analysis of Slope Instability in Soil and Rock

Stability of earth dams including end-of-construction, long term and sudden draw down conditions

Slope Stabilisation Techniques

Site investigation: Sampling and in-situ testing of rocks and soils

Geotechnical instrumentation

## Learning outcomes

By the end of the module, students should be able to:

- Apply the techniques currently available for problem ground improvement.
- Synthesise geotechnical and other data and apply it to the design situations.
- Investigate quantitatively the stability of unreinforced and piled slopes; gravity, embedded and reinforced soil retaining walls; and simple foundations
- Critically assess the importance of pore water pressures and assess the impact of changes in pore water pressure on the stability of geotechnical structures.
- Apply factors of safety and standard empirical modifications to the basic limit-state calculations to meet the demands of real situations.

## Indicative reading list

"Decoding Eurocode 7", Bond, A. , 2008

"Foundation Design and Construction", Tomlinson, M.J, 2001

"Geology for Engineers", Blythe, F.G.H. , 1986

"Soil Mechanics [electronic resource]", Craig, R.F, 2012

"Soil Mechanics: Concepts and Applications", Powrie, W, 2004

## Subject specific skills

Lectures, example classes, field course.

## Transferable skills

No transferable skills defined for this module.

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## Study

### Study time

Type	Required
Lectures	20 sessions of 1 hour (13%)
Other activity	12 hours (8%)
Total	150 hours

<b>Type</b>	<b>Required</b>
Private study	118 hours (79%)
Total	150 hours

### **Private study description**

118 hours of guided independent learning (including VLE use and support from Employer)

### **Other activity description**

2 hours of revision classes  
6 hours of example classes  
4 hours of site visit

### **Costs**

No further costs have been identified for this module.

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### **Assessment**

You must pass all assessment components to pass the module.

#### **Assessment group A**

	<b>Weighting</b>	<b>Study time</b>
Written report	100%	
Written report on a foundation (or similar) design exercise (20 pages max length)		

#### **Feedback on assessment**

Examples solutions during tutorial/lectures  
Individual feedback on final submission  
Cohort-level feedback on final submission

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### **Availability**

#### **Pre-requisites**

To take this module, you must have passed:

- All of

- [ES3G1-15 Geotechnical Engineering I](#)

## **Courses**

This module is Core for:

- Year 4 of DESA-H221 Undergraduate Civil and Infrastructure Engineering (Non-integrated Degree Apprenticeship)