# **ES3G4-15 Geotechnical Engineering II**

# 21/22

Department School of Engineering Level Undergraduate Level 3 Module leader Xueyu Geng Credit value 15 Module duration 24 weeks Assessment 100% exam Study location University of Warwick main campus, Coventry

# 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.

# Study

Study time

Туре	Required	
Lectures	20 sessions of 1 hour (13%)	
Fieldwork	8 sessions of 1 hour (5%)	
Other activity	8 hours (5%)	
Private study	114 hours (76%)	
Total	150 hours	

### Private study description

114 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

# Costs

No further costs have been identified for this module.

### Assessment

You must pass all assessment components to pass the module.

### Assessment group B1

	Weighting	Study time	Eligible for self-certification
Assessment component			
Online Examination ~Platforms - AEP,QMP	100%		No

- Online examination: No Answerbook required
- Students may use a calculator
- Engineering Data Book 5th Edition
- Engineering Data Book 6th Edition
- Engineering Data Book 8th Edition
- Graph paper

Reassessment component is the same

#### Feedback on assessment

Model solutions to questions for exam preparation. Cohort level feedback on the written exam

Past exam papers for ES3G4

# Availability

#### **Pre-requisites**

To take this module, you must have passed:

- All of
  - <u>ES3G1-15 Geotechnical Engineering I</u>

### Courses

This module is Core for:

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