

Geotechnical and Civil Engineering Design

Module Code:	CSE6009-B
Academic Year:	2018-19
Credit Rating:	20
School:	Department of Civil and Structural Engineering
Subject Area:	Civil and Structural Engineering
FHEQ Level:	FHEQ Level 6
Module Leader:	Dr Mostafa Mohamed

Additional Tutors:
Dr Xianghe Dai, Professor Dennis Lam

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	24
Tutorials	24
Directed Study	150
Examinations DO NOT USE	2

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Academic Year (Sept - May)

Module Aims

To extend the application of the fundamental principles of soil behaviour introduced in Soil Mechanics, with particular emphasis on analysis and design of foundation and earth retaining structures; To develop and justify detailed solutions to civil engineering problems by a process of appraisal, analysis and validation using specialist software, codes of practice

and other learned society guidance, as appropriate; To further develop presentation, team working and personal management skills.

Outline Syllabus

Foundations: Design and analysis of shallow foundations (footings) and deep foundations (piles) in compliance with EC7; Types of foundations, design bearing capacity, effect of groundwater table, effect of eccentric and inclined loading; design capacity of piles, efficiency and settlement of pile group; Design and analysis of earth retaining structures (retaining wall etc.); Slope stability analysis and techniques to improve the stability of slopes. The concepts of sustainability are considered in the design of different types of foundation and earth works

Development of detailed working solutions to civil and structural engineering problems from the conceptual solutions proposed by the end of the Feasibility Study module; The working solutions are to be presented in the form of a design report comprising working drawings with supporting calculations and the results of computer-based analysis, where appropriate. Initial improvement of the outline solutions is undertaken as a result of preliminary analysis and critical appraisal. The problems defined in the outline brief issued to the design teams at the start of the Feasibility Study module will vary from year to year but will include many of the following: materials selection and specification; construction method statements and simple programming of work; geotechnical processes; earth retaining structures and foundations; slope stabilisation; structural analysis; design of structural elements (various materials); composite construction; structural and condition assessment of engineering w

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1
 - 1.1 Critically review soil behaviour in analysis and design of geotechnical problems.
 - 1.2 Extend, integrate and apply the knowledge and understanding from previous study to develop detailed solutions to civil engineering problems through a process of appraisal, analysis and validation.
 - 1.3 Apply engineering principles to analyse civil and structural engineering design problems.
 - 1.4 Apply quantitative methods and, where appropriate, computer software to solve civil and structural engineering problems.
- 2
 - 2.1 Use fundamental soil parameters in design and identify their significance.
 - 2.2 Create detailed solutions to engineering problems that satisfy modern performance standards and sustainability requirements.
 - 2.3 Present solutions in the form of detailed drawings and supporting calculations.
- 3
 - 3.1 Present and interpret data
 - 3.2 Solve problems systematically
 - 3.3 Collect, manage, interpret and use design data obtained from a variety of sources; use IT skills to aid the presentation of technical solutions to a problem; demonstrate detail design communication skills (calculations and drawings).

Learning, Teaching and Assessment Strategy

Concepts and principles are introduced using formal lectures; Theory, application, critical analysis and design skills gained through design team-led tutorials; Assessment is by a

formal examination and a team-based project design report.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Formative	Examination - closed book	Closed Book Examination	1 hour	%	No
Summative	Examination - closed book	Closed Book Examination	2 hours	35%	Yes
Summative	Coursework	1 report per design team (drawings and supporting calculations - approx equivalent to 4000 words/student)	0-4000 words	65%	No
Referral	Coursework	Supplementary -1 report per design team (drawings and supporting calculations - approx equivalent to 5000 words/student)	0-5000 words	100%	No

Legacy Code (if applicable)

ENG3306L

Reading List

To view Reading List, please go to [rebus:list](#).