SUBJECT TEACHING GUIDE

G1465 - Geotechnical Engineering: Foundations, Excavations and Tunnels

Degree in Civil Engineering
BILINGUAL UC-CU CIVIL ENGINEERING PROGRAM

Academic year 2023-2024

1. IDENTIFYING DATA				
Degree	Degree in Civil Engineering BILINGUAL UC-CU CIVIL ENGINEERING PROGRAM		Type and Year	Compulsory. Year 2 Optional. Year 1
Faculty	School of civil Engineering			
Discipline	Optional Subjects WORKS ENGINEERING			
Course unit title and code	G1465 - Geotechnical Engineering: Foundations, Excavations and Tunnels			
Number of ECTS credits allocated	6	Term	Semester based (2)	
Web				
Language of instruction	English		Mode of delivery	Face-to-face

Department	DPTO. CIENCIA E INGENIERIA DEL TERRENO Y DE LOS MATERIALES
Name of lecturer	ALMUDENA DA COSTA GARCIA
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Other lecturers	JON JUSTO URRUTIA

3.1 LEARNING OUTCOMES
- Choose appropiate field investigation and soil characterization tests.
- Identify different types of geotechnical works (foundations, earth retaining structures, slopes and tunnels).
- Know the different construction methods for geotechnical works (deep foundations, flexible earth retaining structures, slopes and tunnels) and be able to choose the most appropriate one for each case.
- Design and apply the calculation methods to geotechnical works (deep foundations, flexible earth retaining structures, slopes and tunnels).

4. OBJECTIVES

Know different typologies of geotechnical works.
Know different construction methods for geotechnical works.
Understand design and calculation methods for geotechnical works.
Understand the need of an appropriate geotechnical investigation for a project and know the different survey methods.

6. COURSE ORGANIZATION

CONTENTS	
1	Site investigation
2	Elasticity
3	Plasticity
4	Earth pressures on retaining walls. Rigid walls
5	Flexible walls
6	Shallow foundations
7	Deep foundations
8	Soil slopes

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Exam 1 (Units 1-5)	Written exam	No	Yes	40,00
Exam 2 (Units 6-8)	Written exam	Yes	Yes	40,00
Design of a deep foundation	Work	No	No	10,00
Analisys of a flexible retaining wall	Work	No	No	10,00
TOTAL				100,00

Observations

Regarding those evaluation activities that the students can resit, the following general criteria were adopted at the regular meeting of the Civil Engineering School Board held on June 10, 2010:
- A student can only resit an evaluation activity that has not passed (i.e. a grading lower than 5 out of 10).
- The evaluation activity in the resitting period will follow the same procedure and will have the same guidelines as in the ordinary period.
Note: According to Spanish regulations (RD 1125/2003) about the European credit system and the grading system for University degrees, each course will be graded using a linear scale between 0 and 10 with a precision of a decimal. According to that grading, a qualitative rating may be added:
0.0-4.9: Suspenso (SS). Fail
5.0-6.9: Aprobado (AP). Satisfactory
7.0-8.9: Notable (NT). Good
9.0-10: Sobresaliente (SB). Excellent
9.0-10: Matrícula de Honor (MH). Outstanding (with honours)

Observations for part-time students

Part time students may ask for a different evaluation procedure that consists of a final written exam that covers the full course (100% of the grade) and will be held in the official period for final exams.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Fundamentals of Geotechnical Analysis. I.S. Dunn, L.R. Anderson, F.W. Kiefer. Wiley, 1980.
Geotechnical Engineering. R. Lancellotta. Ed. Rotterdam: A.A. Balkema, 1995.
Foundation Analysis and Design. J.E. Bowles. McGraw-Hill, 1982.
Fundamentals of Geotechnical Engineering. B.M. Das. Thompson cop. 1998.
Guía de Cimentaciones en Obras de Carretera. Min. Fomento, 2002.
Geotecnia y Cimientos II: Mecánica de Suelos y de las Rocas. J.A. Jiménez Salas, J.L. de Justo Alpañés y A.A. Serrano. Ed. Rueda, 1976.