

## SUBJECT TEACHING GUIDE

G1147 - Geotechnical Works

Degree in Civil Engineering

Academic year 2021-2022

1. IDENTIFYING DATA			
Degree	Degree in Civil Engineering	Type and Year	Optional. Year 4
Faculty	School of civil Engineering		
Discipline	Subject Area: Works Engineering Optional Subjects: Other Specialities 3		
Course unit title and code	G1147 - Geotechnical Works		
Number of ECTS credits allocated	6	Term	Semester based (1)
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
E-mail	almudena.dacosta@unican.es
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 1. BECARIOS - GEOTECNIA (1055)
Other lecturers	JORGE CASTRO GONZALEZ

### 3.1 LEARNING OUTCOMES

- Choose appropriate field investigation and soil characterization tests.
- Identify and characterize rock masses.
- Use geomechanical classifications.
- Know the different type of tests for rock mechanical characterization and how to get the mechanical parameters.
- Apply failure criteria to rocks.
- 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.
- Understand the basic principles of rock mechanics.

### 6. COURSE ORGANIZATION

CONTENTS	
1	Geotechnical investigation
2	Rock mechanics
3	Flexible earth retaining structures
4	Deep Foundations
5	Slopes
6	Tunnels

## 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
1st Exam (Units 1-3)	Written exam	No	Yes	40,00
2nd Exam (Units 4-6)	Written exam	Yes	Yes	50,00
Design of a deep foundation	Work	No	No	10,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
<p>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:</p> <ul style="list-style-type: none"> <li>- A student can only resit an evaluation activity that has not passed (i.e. a grading lower than 5 out of 10).</li> <li>- The evaluation activity in the resitting period will follow the same procedure and will have the same guidelines as in the ordinary period.</li> </ul> <p>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)</p>				
<b>Observations for part-time students</b>				
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. Editorial Rotterdam: A.A. Balkema, 1995.
- Foundation analysis and design. J.E. Bowles. Mc Graw-Hill, 1982.
- Fundamentals of Geotechnical Engineering. B.M. Das. Thomson cop., 1998.
- Guía de cimentaciones en obras de carretera. Ministerio de Fomento, 2003.
- Geotecnia y Cimientos II. Mecánica del suelos y de las rocas. J.A. Jiménez Salas, J.L. de Justo Alpañés y A.A. Serrano. Editorial Rueda, 1976.
- Manual de túneles y obras subterráneas. Tomos 1 y 2. C. López Jimeno. U.D. Proyectos. E.T.S.I. Minas. Universidad Politécnica de Madrid, 2011.