SUBJECT TEACHING GUIDE

G1979 - Soil and Rock mechanics

Degree in Civil Engineering

Academic year 2025-2026

1. IDENTIFYING DATA					
Degree	Degree in Civil Engineering			Type and Year	Compulsory. Year 3
Faculty	School of civil Engineering				
Discipline	FUNDAMENTALS OF SOIL ENGINEERING				
Course unit title and code	G1979 - Soil and Rock mechanics				
Number of ECTS credits allocated	6	Term		Semester based (2)	
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. CIENCIA E INGENIERIA DEL TERRENO Y DE LOS MATERIALES
Name of lecturer	JORGE CASTRO GONZALEZ
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Other lecturers	

3.1 LEARNING OUTCOMES
- Identify and classify different types of soils.
- Calculation of pore water pressures in soils. Seepage through soils. Quick condition.
- Calculate total and effective stresses in the soil. The principle of effective stresses.
- Calculate settlements under confined loading conditions.
- Analyse and interpret strength tests carried out on soils in the laboratory (direct shear, triaxial and uniaxial compression).
- To know the main characteristics and tests in intact rock and rock masses.

4. OBJECTIVES
Knowledge and identification of the different types of soils and how they behave in different processes.
Understand the models to predict soil behavior.
Training to define the processes required to obtain soil parameters and critically evaluate the results.
Ability to solve basic problems concerning the relationship between state parameters and soil identification, seepage in soils, computation of settlement under confined compression and strength of soils.
Knowledge of the main characteristics and tests in sound rock and rock masses.

6. SUBJECT PROGRAM	
	CONTENTS
1	Soils and rocks: origin, identification and classification
2	Ground water: at rest and steady flow
3	Stresses in soils
4	Soil behaviour under confined compression. Oedometric test
5	Partially saturated soils
6	Strength and deformation of soils
7	Rock mechanics

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Exam units 1 and 2	Written exam	No	Yes	40,00
Exam units 3, 4 and 5	Written exam	Yes	Yes	50,00
Exam about laboratory sessions	Laboratory evaluation	No	No	10,00
TOTAL				100,00

Observations

If the minimum grade is not obtained in either of the two exams, the final grade will be the average obtained from all evaluation activities, with a maximum value of 4.9, as indicated in Article 35 of the University of Cantabria's current Regulations on Evaluation Processes.
The grades obtained in the different exams will be kept until the additional examination .
In the additional examination, students may retake those parts in which they have not obtained a grade of at least 5; the grade will be that corresponding to the latest exam taken.

Observations for part-time students

Part-time students can choose whether to take the usual exams or a final exam covering the whole module.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Geotecnia I: Propiedades del terreno. C. Sagaseta, J. Cañizal y A. da Costa. E.T.S. de Ingenieros de Caminos, C. y P. Santander, 2007.

Geotecnia y Cimientos I. Propiedades de los suelos y de las rocas. J.A. Jiménez Salas, y J.L. de Justo Alpañés. Editorial Rueda, 1975.

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.