Teaching Guide				
Identifying Data				2024/25
Subject (*)	Advanced Foundation Solutions		Code	632514032
Study programme	Mestrado Universitario en Enxeñería de Camiños, Canais e Portos			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	2nd four-month period	First	Optional	4.5
Language	Galician			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Civil			
Coordinador	Alcón Vidal, Vicente Álvaro	E-mail	vicente.alcon@udc.es	
Lecturers	Alcón Vidal, Vicente Álvaro	E-mail	vicente.alcon@udc.es	
Web	ftp://ceres.udc.es/Asignaturas			
General description	A review will be carried out in the design of conventional foundations to subsequently delve into the different alternatives for the design and execution of special foundations, both new execution and rehabilitation actions from the perspective of the design of the foundation elements itself and the improvement of the land .			

Study programme competences / results	
Code	Study programme competences / results

Learning outcomes			
Learning outcomes	Study programme competences / results		
Identify and analyze the keys and determinants in the design of a foundation of any infrastructure in unique circumstances			
Select the design method adapted to the terrain conditions imposed by the infrastructure			
Acquire knowledge to define and design the execution of the appropriate solution			
Identify and analyze the keys and determinants in the design of a foundation of any infrastructure in unique circumstances			
Select the design method adapted to the terrain conditions imposed by the infrastructure			
Acquire knowledge to define and design the execution of the appropriate solution			

Contents	
Topic	Sub-topic
Introduction	Review basic concepts of geotechnics Reference rules. Eurocode 7.0 Geotechnical reconnaissance of foundations. Special foundations. Special ground and special actions
Shallow foundations.Typology and special cases	Basic concepts of shallow foundations Foundation slabs rock foundations
Deep foundations. Types and special cases	Basic concepts of deep foundations Typologies and execution methods Control methods
Micropiles	Criteria and design factors Calculation methods construction aspects

Ground treatments	Preloads dynamic compaction deep vibration draining wicks gravel columns Other inclusions injections Other treatments
Pathology and rehabilitation of foundations	Pathological study Foundation monitoring Rehabilitation and reinforcement solutions
Foundations in the sea	Reconnaissance of the seabed On-shore foundations Offshore foundations

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Guest lecture / keynote speech		20	10	30
Supervised projects		14	28	42
Case study		6	0	6
Field trip		6.5	0	6.5
Problem solving		13	10	23
Personalized attention		5	0	5
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Guest lecture / keynote speech	The professor of the subject will present in a maxistral session the different topics of the subject. Oral presentation complemented with the use of audiovisual media and the introduction of some questions addressed to students, in order to transmit knowledge and facilitate learning.
Supervised projects	Tutored works Carry out works elaborated by one or several students and present in the classroom on an aspect of foundations in which the student wants to deepen.
Case study	Case study Analysis of real cases from the student's educational perspective, facilitating the understanding of the development of the case and its critical assessment from the technical, economic and social point of view.
Field trip	Field trip We will go to foundation works in progress to check the validity and effectiveness of the concepts acquired, of the methods of execution as well as the organizational systems of operation.
Problem solving	The professors of the subject will carry out, in a collaborative way with the students, practical exercises of application of the theoretical knowledge to strengthen its assimilation.

Personalized attention	
Methodologies	Description
Problem solving Guest lecture / keynote speech Supervised projects	For the development of the works and the understanding of the concepts, personalized attention will be developed in person or on-line with the students without limit.

Assessment			
Methodologies	Competencies / Results	Description	**Qualification**

Problem solving		Check with the teachers of the subject the resolution of the proposed problems.	25
Case study		Study and assessment of information Retrospective analysis Study of alternatives in initial situation	15
Guest lecture / keynote speech		Attendance and participation in classes and possible conferences.	25
Supervised projects		Carry out and present the tutored work in the classroom. Answer, after the presentation, the questions about it from the students and teachers of the subject.	35

Assessment comments

Sources of information	
Basic	- Braja M. Das (2020). Principles of Foundation Engineering (9th Edition) . Cengage Learning Inc. - Jimenez Salas y otros (1980). Geotecnia y Cimientos II y III. Rueda - Port Authority of Spain (2005). Recommendations for maritime works. Mº Fomento - Minisitry of Transport of Spain (2020). Guia para el proyecto de cimnetaciones en obras de carretera con Eurocodigo 7 . Mº Fomento - UE (en 1997). EUROCODIGO 7.0. AENOR - Minisitry of Transport of Spain (2006). CTE SE-C Seguridad Estructural de cimientos. Mº Fomento
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Extension in Soil Engineering/632514013
Subjects that are recommended to be taken simultaneously
Underground Constructions and Tunnels/632514030
Subjects that continue the syllabus
Other comments

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.