

## SUBJECT TEACHING GUIDE

### 544 - Experimental Methods in Laboratory and Field

#### Master's Degree in Coasts and Ports

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Master's Degree in Coasts and Ports			Type and Year	Compulsory. Year 1
Faculty	School of civil Engineering				
Discipline					
Course unit title and code	544 - Experimental Methods in Laboratory and Field				
Number of ECTS credits allocated	1	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. CIENCIAS Y TECNICAS DEL AGUA Y DEL MEDIO AMBIENTE				
Name of lecturer	MARIA EMILIA MAZA FERNANDEZ				
E-mail	mariaemilia.maza@uncan.es				
Office	Edificio IH Cantabria. Planta: + 2. SALA COMUN (215-5)				
Other lecturers					

3.1 LEARNING OUTCOMES
- The students will learn the advantages and disadvantages of the various experimental methods used in coastal engineering: numerical, physical experimentation in the laboratory and field experiments.
- The students will be able to perform dimensional analysis of the most common processes in coastal engineering and know the most common dimensionless numbers used in the scaling of these processes.
- The students will be able to project physical model tests of flow and stability of artificial or natural structures under the action of waves and currents
- Students will be able to project movable bed and transport of conservative substances physical model tests under the action of waves and currents.
- The students will be introduced to the most common measurement techniques in physical modeling and in field campaigns.

#### 4. OBJECTIVES

The student acquires the necessary knowledge to design a laboratory campaign.

The students should be aware of the capabilities and limits of physical modelling in the laboratory, as well as the accuracy of the results obtained and their direct relationship with the design process of the experimental campaign.

The students will recognize the most relevant parameters of the study, they be able to select appropriate scaling laws and plan an effective test campaign.

The students should be familiar with the most advanced laboratory measurement systems.

#### 6. COURSE ORGANIZATION

##### CONTENTS

1	Introduction to physical models
2	Dimensional analysis, pi theorem, scaling, errors in physical modeling, and types of physical models.
3	Fixed and movable bed tests, scaling of movable bed tests
4	Methods and measurement techniques

#### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Practice assignment	Work	No	Yes	40,00
Final exam	Written exam	No	Yes	60,00
TOTAL				100,00
Observations				
Observations for part-time students				
The same evaluation criteria will be applied to part-time students as to full-time students. The time distribution of activities will be adapted to the particular conditions of each student when deemed necessary.				

#### 8. BIBLIOGRAPHY AND TEACHING MATERIALS

##### BASIC

Steven A Hughes (World Scientific). Physical Models and Laboratory Techniques in Coastal Engineering