SUBJECT TEACHING GUIDE

G1982 - Maritime Works

Degree in Civil Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Civil Engineering			Type and Year	Compulsory. Year 3
Faculty	School of civil Engineering				
Discipline	WORKS ENGINEERING				
Course unit title and code	G1982 - Maritime Works				
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. CIENCIAS Y TECNICAS DEL AGUA Y DEL MEDIO AMBIENTE
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3.1 LEARNING OUTCOMES

- Identify the characteristics of the different types of marine works and understand the functional needs of the most common marine tasks, used in port and coastal engineering. Knowing machinery characteristics and construction processes of maritime works. Know the procedures for the design, construction, operation and management of maritime works. Understand, predict and act against the risks for the construction, operation or maintenance of maritime works, under the action of environmental variables such wind, waves, currents and tides. Know the order of magnitude of production and costs of the main units of maritime work.

4. OBJECTIVES
The first fundamental objective of this course is that the student would be able to identify the characteristics of the different types of marine works, understand the functional needs of those most common marine works, used in port and coastal engineering.
The second main objective is that student would familiarize themselves with the machinery and construction processes of maritime works.
The third objective is that the student would be able to understand, predict and act accordingly against the risks for the construction, operation or maintenance of maritime works represent environmental variables such as wind, waves, currents and tides.

6. COURSE ORGANIZATION	
	CONTENTS
1	Theme 1. General Introduction to Maritime Works Structure, composition and marine dynamics Structure and composition of the Ocean Ocean dynamics: Sea level, tidal waves, currents and waves Ocean Dynamics: Waves and wave propagation Ocean dynamics: Spectral and statistical description wave
2	Theme 2. Marine construction and Marine physical environment
3	Theme 3. Geothecnical aspects related with maritime works and construction
4	Theme 4. Environmental impact in maritime construction
5	Theme 5. Materials and manufacturing of maritime works
6	Theme 6. Equipment for the construction of marine works and offshore structures Oscillations, flotation, stability, damage control Floating equipment: cranes, barges, boats, tugs, dredgers
7	Theme 7. Sea operations Towing, mooring lines and anchors, handling heavy loads, personal Underwater operations, submerged concretes, offshore surveys
8	Theme 8.. Pile driving works in coastal and offshore
9	Theme 9. Maritime works in harbors and estuaries Port structures Structures in estuaries and rivers Prefabricated tunnels Flow control structures
10	Theme 10. Coastal Structures Outfalls and intakes Rubble-mound breakwaters Vertical breakwaters Other coastal structures
11	Theme 11. Other technology applications offshore construction Monobuoys anchors, articulated columns, background structures Offshore gas terminals, OTEC plants, offshore wind and wave energ
12	Tutorship
13	Theoretical / practical partial and final exams

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Partial test number 1	Written exam	No	Yes	30,00
Partial test number 2	Written exam	No	Yes	30,00
Homework 1	Others	No	Yes	20,00
Homework 2	Others	No	Yes	20,00
TOTAL				100,00

Observations

Two partial exams will be performed, and each is discharging for the final exam if a grade of 4 or above is achieved. Both test are recoverable, they may be individually recovered in the official period set by the University (July and September).
If any part of the course are not approved the student will have to re-examined all the parts the following year, regardless of whether they have approved the partial test.
The partial or final exams cover a 60% of the final grade. A suspended in the partial partial note will not be taken into account.
Practices are compulsory and will be required to make the exams and cover a 40% of the final grade.
'In connection with the resolutions adopted at the regular meeting of the School Board held on June 10, 2010, states that, with respect to evaluation activities having the character of recoverable,

• As a general criterion approved test will have a note of 4 or more / 10.

Only for duly justified causes (eg sanitary restrictions), the evaluations may be organized remotely, with prior authorization from the Center's Directorate.

Observations for part-time students

It will be mandatory the presentation of both partial tests and the final exam. If the student has any problems (family obligations, labor, etc.) to present some of partial or final tests, those dates are likely to be modified for each individual student, considering the part-time student status. Part-time students, by having a different academic profile (i.e. previous work experience, internship experience, etc.) may propose additional themes, practical problems and/or solving new exercises related to their own activities of interest in connection with the construction of marine works, which may be submitted by the student as additional material to enrich the class, oral presentations and / or research that will be useful for the rest of the class. These alternative activities will be evaluated and have a weight equivalent to the final examination or any of the partial tests. Any alternative organization or change in the evaluation will be conducted in a particularized for each student and concerted manner between both parties (teacher and student).

Part-time students will apply the same assessment criteria as full-time students. The temporary distribution of activities will be adapted to the particular conditions of each student when deemed necessary.

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
Programa R.O.M. Puertos del estado
Krystian W. Pilarczyk. Dikes and revetments. A.A. Balkema. 1998.
Ben C. Gerwick, Jr. Construction of Marine and Offshore Structures, Third Edition. ISBN 9780849330520
Per Bruun. Design and construction of mounds for breakwaters and coastal protection. Elsevier. 1985.
Vicente Negro, Ovidio Varela, Jaime H. García y José Santos. Diseño de diques verticales. Colegio de Ingenieros de Caminos, Canales y Puertos. 2001.
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Jonathan Simm and Ian Cruickshank. Construction risk in coastal engineering. Thomas Telford, 1998.
Turgut Sarpkaya and Michael Isaacson. Mechanics of wave forces on offshore structures. Van Nostrand Reinhold Company Inc. 1981.
Hans F. Burchath and Alberto Lamberti. Environmental design of low crested coastal defence structures (DELOS): Design guidelines. Pitagora Editrice Bologna. 2004.
H. Oumeraci, A. Kortenhaus, W. Alsop, M. de Groot, R. Crouch, H. Vrijling and H. Voortman. Probabilistic design tools for vertical breakwaters, PROVERBS. 2001
Port enginDesign and construction of ports and marine structures. McGraw-Hill Companies, 1971 - 611 páginaseering, Volumen 1. Per Bruun. Gulf Publishing Company, 1989
Port engineering: planning, construction, maintenance, and security. Gregory P. Tsinker. John Wiley & Sons, 2004 - 881 páginas