UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: PORTS AND COASTS
Code: 310805
Type: CORE COURSE
ECTS credits: 4.5
Degree: 2343 - MASTERS DEGREE PROGRAMME IN ENGINEERING OF ROADS, CANALS AND PORTS
Academic year: 2021-22
Center: 603 - E.T.S. CIVIL ENGINEERS OF CR
Group(s): 20
Year: 1
Duration: First quarter
Main language: Spanish
Second language: English
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **Mª DEL CARMEN CASTILLO SANCHEZ** - Group(s): **20**

Building/Office	Department	Phone number	Email	Office hours
A-44	INGENIERÍA CIVIL Y DE LA EDIFICACIÓN	3294	mariacarmen.castillo@uclm.es	To be set at the beginning of the semester

2. Pre-Requisites

Not established

3. Justification in the curriculum, relation to other subjects and to the profession

The subject aims at providing the students with the fundamental knowledge to understand coastal processes and elements

4. Degree competences achieved in this course

Course competences

Code	Description
CB06	Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas, often in a research context.
CB07	Apply the achieved knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to the area of study
CB08	Be able to integrate knowledge and face the complexity of making judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of knowledge and judgments
CB09	Know how to communicate the conclusions and their supported knowledge and ultimate reasons to specialized and non-specialized audiences in a clear and unambiguous way
CB10	Have the learning skills which allow to continue studying in a self-directed or autonomous way
G01	Scientific-technical and methodological capacity for the continuous recycling of knowledge and the exercise of the professional functions of consultancy, analysis, design, calculation, project, planning, leadership, management, construction, maintenance, conservation and exploitation in the fields of civil engineering.
G02	Understanding of the multiple technical, legal and property constraints that arise in the design of a public work, and the capacity to establish different valid alternatives, to choose the optimum one and to express it adequately, anticipating the problems of its construction, and using the most suitable methods and technologies, both traditional and innovative, with the aim of achieving the greatest efficiency and promoting the progress and development of a sustainable and respectful society with the environment.
G03	Knowledge, understanding and ability to apply the necessary legislation in the exercise of the profession of Civil Engineer.
G06	Ability to plan, design, inspect and manage land (roads, railways, bridges, tunnels and urban roads) or sea (port works and facilities) transport infrastructures.
G25	Ability to identify, measure, enunciate, analyse, diagnose and scientifically and technically describe a civil engineering problem
G27	Ability to communicate in a second language.
G28	Ability to work in an international context.
G29	Management capacity and teamwork.
TE07	Knowledge and skills to understand the dynamic phenomena involved in the ocean-atmosphere-coast environment and be able to provide answers to littoral, port and coastal problems, including the impact of actions on the coastline. Capacity to carry out studies and projects of maritime works.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Students understand coastal morphodynamics.

Students understand the performance principles of maritime works for their design.

Students identify and know the actions of the marine dynamics on the seabed, the coastline, maritime works and structures and those of the latter on the marine dynamics.

Students can determine the maritime climate for the design of interventions in the marine environment.

Students know the regulatory framework and technical recommendations, both national and international.

Students know the sources of information and the treatment of the data for the design.

Students are familiar with orders of magnitude and scales in coastal engineering.

6. Units / Contents

Unit 1: Mathematical, physical and hydrodynamical preliminaries
Unit 2: Water wave theory formulation and solution
Unit 3: Kinematic and dynamic wave properties
Unit 4: Averaged values and energy flux for wave propagation
Unit 5: Wave transformation processes
Unit 6: Short-term and long-term wave analysis
Unit 7: Long waves and water level
Unit 8: Coastal structures
Unit 9: Shoreline processes
Unit 10: Technical documents
Unit 11: Numerical models

7. Activities, Units/Modules and Methodology

Training Activity	Methodology	Related Competences	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G06 G25 G27 G28 TE07	0.66	16.5	N	-	
Class Attendance (practical) [ON-SITE]	Combination of methods	CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G06 G25 G27 G28 G29 TE07	0.33	8.25	Y	N	Active participation and exercises solved during class hours will be evaluated and cannot be retaken
Computer room practice [ON-SITE]	Combination of methods	CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G06 G25 G27 G28 G29 TE07	0.08	2	Y	N	Working with software
Problem solving and/or case studies [ON-SITE]	Combination of methods	CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G06 G25 G27 G28 G29 TE07	0.28	7	Y	N	Active participation and exercises solved during class hours will be evaluated and cannot be retaken
Writing of reports or projects [OFF-SITE]	Combination of methods	CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G06 G25 G27 G28 G29 TE07	0.43	10.75	Y	Y	Small group work on a case with a final report and an oral exam based on case report (individually graded through group exam)
Study and Exam Preparation [OFF-SITE]	Combination of methods	CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G06 G25 G27 G28 G29 TE07	2	50	N	-	Some tools will be available to help students study
On-line Activities [OFF-SITE]	Combination of methods	CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G06 G25 G27 G28 TE07	0.32	8	Y	N	On-line tests
Other off-site activity [OFF-SITE]	Combination of methods	CB06 CB07 CB08 CB09 CB10 G01 G02 G03 G06 G25 G27 G28 G29 TE07	0.4	10	Y	N	Students can solve exercises or cases as part of the evaluation
Final test [ON-SITE]	Assessment tests		0	0	Y	Y	
		Total:	**4.5**	**112.5**			
		Total credits of in-class work: 1.35					**Total class time hours: 33.75**
		Total credits of out of class work: 3.15					**Total hours of out of class work: 78.75**

As: Assessable training activity
Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System

Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Final test	70.00%	60.00%	Written exam 1 (Units 1 through 5/Tema 1 through Tema 5): WE1; Written exam 2 (Units 6 and 7/Tema 6 and Tema 7): WE2; Written exam 3 (Units 8 and 9/Tema 8 and Tema 9): WE3; Each WE includes theory (WE1T, WE2T, WE3T) and practice (WE1P, WE2P, WE3P) within 30% and 70% which have to be passed separately. They can be retaken For the non-continuos evaluation, just a final exam (FE) including theory (FET) and practice (FEP)
Assessment of active participation	5.00%	0.00%	Problem or case solving in class hours: (CH) They cannot be retaken
Assessment of problem solving and/or case studies	5.00%	0.00%	Problem or case solving outside of class hours: (OCH) They cannot be retaken
Assessment of activities done in the computer labs	5.00%	0.00%	Problem or case solving outside of class hours: (CS) They can be retaken
Test	5.00%	0.00%	On-line test including technical vocabulary which is the only part that can be retaken: (T)
Projects	5.00%	5.00%	Group work on a case: report (GWR) It can be retaken
			Group work on a case: questions;

Projects	5.00%	5.00%	Oral exam based on case report (individually graded through group exam) (GWQ) It can be retaken
Oral presentations assessment	0.00%	30.00%	Oral presentation of an original work based on a scientific paper/topic related with the subject (OP) It cannot be retaken. Just one submission per academic year
Total:	**100.00%**	**100.00%**	

According to art. 6 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 13.2) to be globally graded, in 2 annual calls per subject , an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

In order to pass the subject, the following requirements must be satisfied: (at any time: progress tests, final exam o retake exam dates)
a) WE1T, WE2T, WE3T>=2;
b) WE1P, WE2P, WE3P>=2;
c) WE1, WE2, WE3>=4;
d) GWR, GWQ>=4;
e) Global mark: (0.7*(WE1+WE2+WE3)/3+0.05*(GWR+GWQ+CH+OCH+CS+T))>=5;

For notation, see the Grading System table (above).

Part of each written exam can be replaced by a problem/case to be solved outside of class hours individually (just applicable for progress tests).

An extra point can be awarded for each written exam. Format is decided throughout the semester.

A compulsory case/problem is to be solved in small groups and a report must be uploaded. After that, an oral group exam is held based on the report where the students are graded individually. Groups of only one member are not allowed.

Any plagiarism will be sanctioned with a 0 in the corresponding global activity. Global activities are described in the Grading System table.

Any details on content, extension and requirements of written exercises will be indicated on virtual campus at the beginning of the semester.

All minimum marks on this guide refer to (a maximum of) 10 points.

Non-continuous evaluation:

Unless stated otherwise, continuous evaluation criteria will be applied to all students.
Anyone choosing non-continuous assessment must notify it to the lecturer within the class period of the subject. The option is only available if the student¿s participation in evaluation activities (from the continuous assessment) has not reached 50% of the total evaluation for the subject.
For the retake exam, the assessment type used for the final exam will remain valid.

All activities are individual

Any plagiarism will be sanctioned with a 0 in the corresponding global activity. Global activities are described in the Grading System table.

In order to pass the subject, the following requirements must be satisfied:
a) FET, FEP>=2;
b) GWR, GWQ>=4;
c) Global mark: (0,6*FE+0,3*OP+0,05*(GWR+GWQ))>=5;

The same criteria will be applied to the retake exam.

Specifications for the resit/retake exam:

In order to pass the subject the same criteria as in the final exam apply.

No possibility of replacing part of this exam by a problem/case to be solved outside of class hours individually.

No new extra points for this exam.

All activities to be retaken are indicated in the Grading System table.

Any plagiarism will be sanctioned with a 0 in the corresponding global activity. Global activities are described in the Grading System table.

For the retake exam, the assessment type used for the final exam will remain valid.

Specifications for the second resit / retake exam:

Same criteria as the non-continuous evaluation

9. Assignments, course calendar and important dates

Not related to the syllabus/contents	
Hours	**hours**
Writing of reports or projects [AUTÓNOMA][Combination of methods]	10.75
Unit 1 (de 11): Mathematical, physical and hydrodynamical preliminaries	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	1
Unit 2 (de 11): Water wave theory formulation and solution	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	2
Other off-site activity [AUTÓNOMA][Combination of methods]	.5
Unit 3 (de 11): Kinematic and dynamic wave properties	

Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Class Attendance (practical) [PRESENCIAL][Combination of methods]	1
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	2
On-line Activities [AUTÓNOMA][Combination of methods]	1
Other off-site activity [AUTÓNOMA][Combination of methods]	1
Unit 4 (de 11): Averaged values and energy flux for wave propagation	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	.5
Class Attendance (practical) [PRESENCIAL][Combination of methods]	.25
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	1
Unit 5 (de 11): Wave transformation processes	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2
Computer room practice [PRESENCIAL][Combination of methods]	.5
Problem solving and/or case studies [PRESENCIAL][Combination of methods]	2
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	9
On-line Activities [AUTÓNOMA][Combination of methods]	1
Other off-site activity [AUTÓNOMA][Combination of methods]	1.5
Unit 6 (de 11): Short-term and long-term wave analysis	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2
Computer room practice [PRESENCIAL][Combination of methods]	.5
Problem solving and/or case studies [PRESENCIAL][Combination of methods]	2
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	9
On-line Activities [AUTÓNOMA][Combination of methods]	2
Other off-site activity [AUTÓNOMA][Combination of methods]	1.5
Unit 7 (de 11): Long waves and water level	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Class Attendance (practical) [PRESENCIAL][Combination of methods]	1
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	6
On-line Activities [AUTÓNOMA][Combination of methods]	1
Other off-site activity [AUTÓNOMA][Combination of methods]	1.5
Unit 8 (de 11): Coastal structures	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Combination of methods]	2
Computer room practice [PRESENCIAL][Combination of methods]	.5
Problem solving and/or case studies [PRESENCIAL][Combination of methods]	1
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	9
On-line Activities [AUTÓNOMA][Combination of methods]	1.5
Other off-site activity [AUTÓNOMA][Combination of methods]	2
Unit 9 (de 11): Shoreline processes	
Activities	**Hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Computer room practice [PRESENCIAL][Combination of methods]	.5
Problem solving and/or case studies [PRESENCIAL][Combination of methods]	2
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	7
On-line Activities [AUTÓNOMA][Combination of methods]	1
Other off-site activity [AUTÓNOMA][Combination of methods]	2
Unit 10 (de 11): Technical documents	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	2
On-line Activities [AUTÓNOMA][Combination of methods]	.5
Unit 11 (de 11): Numerical models	
Activities	**Hours**
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	2
Global activity	
Activities	**hours**
Computer room practice [PRESENCIAL][Combination of methods]	2
Problem solving and/or case studies [PRESENCIAL][Combination of methods]	7
Writing of reports or projects [AUTÓNOMA][Combination of methods]	10.75
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	50
On-line Activities [AUTÓNOMA][Combination of methods]	8
Other off-site activity [AUTÓNOMA][Combination of methods]	10
Class Attendance (practical) [PRESENCIAL][Combination of methods]	8.25
Class Attendance (theory) [PRESENCIAL][Lectures]	16.5
Total horas:	112.5

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
BRUNN, P.	Port Engineering, Vol 1. Harbor Planning, Breakwaters and Marine Terminals,	Gulf Publishing Company.			1989	
BRUNN, P.	Port Engineering, Vol 2. Harbor Transportation, Fishing Ports, Sediment Transport, Geomorphology, Inlets and Dredging.	Gulf Publishing Company			1989	
Dean, Robert G.	Coastal processes: with engineering applications	Cambridge University Press		0-521-60275-0	2004	
Dean, Robert G.	Water wave mechanics for engineers and scientists	World Scientific		981-02-0421-3	2006	
Dingemans, Maarten W.	Water wave propagation over uneven bottoms	World Scientific Pub.		981-02-0426-4	2000	
Dyke, P. P. G.	Modeling coastal and offshore processes	Imperial College Press		978-1-86094-675-2	2007	
Fredsoe, Jorgen	Mechanics of coastal sediment transport	World Scientific		981-02-0841-3	2005	
Hudspeth, Robert T.	Waves and wave forces on coastal and ocean structures	World Scientific		981-238-612-2	2006	
Hughes, Steven A.	Physical models and laboratory techniques in coastal enginee	World Scientific		981-02-1540-1	1995	
Kamphuis, J. William	Introduction to coastal engineering and management	World Scientific		981-02-4417-7	2002	
Kim, Cheung Hun	Nonlinear waves and offshore structures	World Scientific		978-981-02-4885-7	2008	
Le Méhauté, Bernard1927-	Water waves generated by underwater explosion	World Scientific		981-02-2083-9	1996	
Losada, M.A. et al.	Apuntes de Puertos y Costas. Parte 1: Fundamentos del movimiento oscilatorio	Universidad de Granada			2000	
Massel, Stanislaw R.	Ocean surface waves: their physics and prediction	World Scientific		981-02-2109-6	2005	
Goda, Y.	Random seas and design of maritime structures	World Scientific		981-02-3256-X	2000	
Masselink, Gerhard	Introduction to coastal processes and geomorphology	Arnold		0-340-76411-2	2003	
Mei, Chiang C.	The Applied dynamics of ocean surface waves	World Scientific		9971-50-789-7	2003	
Mei, Chiang C.	Theory and applications of ocean surface waves	World Scientific		981-238-894-X	2005	
NEGRO, V., VARELA, O., GARCÍA, J. H. y LÓPEZ, J. S.	Diseño de diques verticales.	Colegio de Ingenieros de Caminos, Canales y Puertos			2001	
NEGRO, V., VARELA, O., GARCÍA, J. H. y MORA, J. I.	Diseño de diques rompeolas.	Colegio de Ingenieros de Caminos, Canales y Puertos			2002	
PUERTOS DEL ESTADO	Guía de buenas prácticas para la ejecución de obras marítimas				2008	
PUERTOS DEL ESTADO	ROM 0.0, Procedimiento general y bases de cálculo en el proyecto de obras marítimas y portuarias.				2001	
PUERTOS DEL ESTADO	ROM 0.2-90, Acciones en el proyecto de obras marítimas y portuarias				1990	
PUERTOS DEL ESTADO	ROM 0.3-91, Clima marítimo en el litoral español: Oleaje				1991	
PUERTOS DEL ESTADO	ROM 0.4-95, Clima marítimo en el litoral español: Viento.				1995	
PUERTOS DEL ESTADO	ROM 0.5-05, Recomendación geotécnica para las obras marítimas y/o portuarias				2005	
PUERTOS DEL ESTADO	ROM 0.5-94, Recomendaciones geotécnicas para el proyecto de obras marítimas y portuarias.				1994	
PUERTOS DEL ESTADO	ROM 1.0-09, Recomendaciones del diseño y ejecución de las obras de abrigo				2009	

PUERTOS DEL ESTADO	ROM 2.0-11, Recomendaciones para el proyecto y ejecución en las obras de atraque y amarre			2011
U. S. Army.	Coastal Engineering Manual.	Coastal Engineering Research Center.		2002
PUERTOS DEL ESTADO	ROM 3.1-99, Proyecto de la configuración marítima de los puertos, canales de acceso y áreas de navegación.			1999
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	PIV and water waves	World Scientific	981-238-949-0	2004
Rebeca Gómez; Rafael Molina; Carmen Castillo; Ignacio Rodríguez; José Damián López.	Conceptos y herramientas probabilísticas para el cálculo del riesgo en el ámbito portuario	Puertos del Estado	978-84-88740-09-0	2018