

**1. General information****Course:** PORTS AND COASTS**Type:** CORE COURSE**Degree:** 2343 - MASTERS DEGREE PROGRAMME IN ENGINEERING OF ROADS, CANALS AND PORTS**Center:** 603 - E.T.S. CIVIL ENGINEERS OF CR**Year:** 1**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 310805**ECTS credits:** 4.5**Academic year:** 2021-22**Group(s):** 20**Duration:** First semester**Second language:** English**English Friendly:** Y**Bilingual:** N**Lecturer:** M<sup>a</sup> DEL CARMEN CASTILLO SANCHEZ - Group(s): 20

Building/Office	Department	Phone number	Email	Office hours
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**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 (only degrees before RD 822/2021)	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	
<b>Total:</b>			<b>4.5</b>	<b>112.5</b>			
<b>Total credits of in-class work: 1.35</b>			<b>Total class time hours: 33.75</b>				
<b>Total credits of out of class work: 3.15</b>			<b>Total hours of out of class work: 78.75</b>				

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-continuous 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

Projects	5.00%	5.00%	Group work on a case: questions; 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
<b>Total:</b>	<b>100.00%</b>	<b>100.00%</b>	

According to art. 4 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. 12.2) 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 $\geq$ 2;
- b) WE1P, WE2P, WE3P $\geq$ 2;
- c) WE1, WE2, WE3 $\geq$ 4;
- d) GWR, GWQ $\geq$ 4;
- e) Global mark:  $(0.7 \cdot (WE1+WE2+WE3)/3 + 0.05 \cdot (GWR+GWQ+CH+OCH+CS+T)) \geq 5$ ;

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 $\geq$ 2;
- b) GWR, GWQ $\geq$ 4;
- c) Global mark:  $(0.6 \cdot FE + 0.3 \cdot OP + 0.05 \cdot (GWR+GWQ)) \geq 5$ ;

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

<b>Unit 3 (de 11): Kinematic and dynamic wave properties</b>	
<b>Activities</b>	<b>Hours</b>
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
<b>Unit 4 (de 11): Averaged values and energy flux for wave propagation</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	.5
Class Attendance (practical) [PRESENCIAL][Combination of methods]	.25
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	1
<b>Unit 5 (de 11): Wave transformation processes</b>	
<b>Activities</b>	<b>Hours</b>
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
<b>Unit 6 (de 11): Short-term and long-term wave analysis</b>	
<b>Activities</b>	<b>Hours</b>
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
<b>Unit 7 (de 11): Long waves and water level</b>	
<b>Activities</b>	<b>Hours</b>
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
<b>Unit 8 (de 11): Coastal structures</b>	
<b>Activities</b>	<b>Hours</b>
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
<b>Unit 9 (de 11): Shoreline processes</b>	
<b>Activities</b>	<b>Hours</b>
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
<b>Unit 10 (de 11): Technical documents</b>	
<b>Activities</b>	<b>Hours</b>
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	2
On-line Activities [AUTÓNOMA][Combination of methods]	.5
<b>Unit 11 (de 11): Numerical models</b>	
<b>Activities</b>	<b>Hours</b>
Study and Exam Preparation [AUTÓNOMA][Combination of methods]	2
<b>Global activity</b>	
<b>Activities</b>	<b>hours</b>
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

## 10. Bibliography and Sources

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Fredsoe, Jorgen	Mechanics of coastal sediment transport	World Scientific		981-02-0841-3	2005	
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PUERTOS DEL ESTADO	ROM 0.3-91, Clima marítimo en el litoral español: Oleaje				1991	
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