Universidad Zaragoza

Year : 2019/20

28767 - Maritime and Coastal Engineering

Syllabus Information

Academic Year: 2019/20
Subject: 28767 - Maritime and Coastal Engineering
Faculty / School: 175 -

Degree: 423 - Bachelor's Degree in Civil Engineering

ECTS: 6.0
Year: 4
Semester: Second semester
Subject Type: Optional
Module: ---

1.General information

1.1.Aims of the course

Give an overview of what ports and coasts are and represent, as well as providing a comprehensive basis, both theoretical-conceptual and practical, allowing a further specialization in any of the specific aspects of this field.

We can consider that the field of Maritime Engineering is subdivided into two others: port engineering and coastal engineering. Within port engineering, this syllabus is primarily oriented to the design of ports and dock works, based on existing standards and recommendations.

With respect to coastal engineering coasts and the different physical phenomena that occur in them are discussed. Also the design of protective measures (beach regenerating and / or coastal protection structures) is studied.

A common denominator for the study of port and coastal engineering has the study of marine climate, mainly the surf. This allows, among other things, determine the actions of marine works design, estimate the operation of port facilities, and study the physical processes produced on the coasts.

1.2.Context and importance of this course in the degree

The subject of Maritime and Coastal Engineering is part of the Degree in Civil Engineering offered by the EUPLA, included in the group of subjects in the so called Specific Training. It is a third-year course located on the sixth semester and mandatory (OB), with a teaching load of 6 ECTS.

The convenience of the subject in the curriculum of this degree is more than justified and it is understood that ideally, as a student, this course should be taken with clear ideas with regard to knowledge of mathematics and physics, and previous knowledge acquired in earlier courses.

1.3.Recommendations to take this course

Although passing mathematics is not required it is highly recommended to have acquired a certain skill in it.

2.Learning goals

2.1.Competences

E03. Ability for the building and maintenance of maritime works.

G01. Ability for organization and planning.

G02. Ability to solve problems.

G03. Ability to make decisions.

G04. Suitability for oral and written communication in their mother tongue.

G05. Ability for analysis and synthesis.

G06. Ability to manage information.

G07. Ability for teamwork.

G08. Ability for critical thinking.

G09. Ability to work in an interdisciplinary team.

G10. Ability to work in an international context.

G11. Ability to improvise and adapt themselves to face new situations.

G12. Leadership ability.

G13. Positive social attitude towards social and technological innovations.

G14. Reasoning ability, discussion and presentation of ideas.

G15. Communication skills through word and image.

G16. Ability to Search, analyze and select information.

G17. Ability for independent learning.

G18. Acquire knowledge and understanding in a field of study ranging from general secondary education to the forefront.

G19. Apply their knowledge to their work in a professional manner and get competences typically demonstrated through devising and sustaining arguments and solving problems within their field of study.

G20. Ability to gather and interpret relevant data (usually within their field of study) to make informed judgments that include reflection on relevant social, scientific or ethical issues.

G21. Transmit information, ideas, problems and solutions to both specialist and non-specialist audiences.

G22. Develop those skills needed to undertake further studies with a high degree of autonomy.

G23. Learn and understand the respect to fundamental rights, equal opportunities between men and women, universal accessibility for people with disabilities, and respect for the values ??of the culture of peace and democratic values.

G24. Foster entrepreneurship.

G25. Knowledge on information and communication technology. Context and meaning of the subject in the degree

2.2.Learning goals

1. The student, at the end of the course, will learn the hydrodynamic basics of coastal regions, theory and properties of waves and knowledge about the most common sea works.

2. Determine the maritime climate which affects actions in coasts and ports from the wind to the waves and calculation levels.

3. Understand the interaction between coastal dynamics and morphodynamics of coastal shapes and their generation, so that they can deduce the consequences on coastal resources of the different forms of occupation of the coast and the actions in ports.

4. Understanding the nature and evolution of ports, their conditioning on the side of the ship and land transport and basic criteria for spatial management and planning, also introducing the operation, management and port planning and works and Port Engineering and offshore actions.

5. Achieve ability for functional and structural design of dams, docking port works and works and actions of protection and coastal development, and for the design of its construction procedures.

2.3.Importance of learning goals

This course has a strong engineering orientation, ie, it offers training with immediate application and content development in the labor and professional market. Through the achievement of relevant learning outcomes the required ability for understanding the performance of sizing sea works is obtained.

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

The assessment process will include two types of action:

a. A system of continuous assessment, which will take place throughout the learning period.

b. A global assessment test that reflects the achievement of learning outcomes at the end of the teaching period.

a. Continuous assessment system.

These evaluative processes will be made through:

- Direct observation of the student to know their attitude towards the subject and the work that is required (attention in the lectures, the carrying out of tasks assigned to them, solving issues and problems, active participation in the classroom, etc.).

- Direct observation of the skills in everyday work.

- Checking of their progress in the conceptual field (class questions, comments in the classroom, exams, etc.).

The following points summarize the approximate rating of the parts mentioned in the assessment process.

? Participation in Class 5%

? Mandatory Projects / work 10%

? Written tests 5%

? Final Assessment Test 80%

The participations in theoretical and / or practical classes will be accepted both in the classroom and virtual (in the virtual

campus, forums or other means accepted in the subject).

All students that cannot reach the minimum goals required in practical tests, exams or suggested academic work in the subject, automatically switch to the non-continuous assessment model.

The student will not pass the subject until he has handed in the project commissioned by the teacher, being September the deadline for that.

Attendance to classroom activities must be at least 80%, students who do not meet this requirement will be out of the continuous assessment.

b. Global Final Assessment Test.

The global assessment test will consist of the following group of activities:

- **Exercises, theoretical issues and suggested works**: The teacher proposes exercises, problems, case studies, theoretical issues, etc. to be solved individually, which must be handed in before a suggested date.

- **Written exam**: Due to the type of course, it will consist of theoretical and practical problems and tests. All that with reasonable resolution time. The most suitable type of test consists of the solving exercises with theoretical and / or practical application of similar characteristics to the ones solved along the year.

In the following points the approximate weights of the evaluation process are shown:

? Projects / Mandatory tasks 20%

? Final Assessment Test 80%

The student will not pass the subject until he has handed in the project commissioned by the teacher, being September the deadline for that.

No grades of an academic year will be valid for the next.

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The teaching methodology is based on a strong interaction teacher / student. This interaction is made a reality by a division of work and responsibilities between students and teachers. However, we have to be aware that to some extent the students can decide their pace of learning according to their needs and availability, following the guidelines set by the teacher.

4.2.Learning tasks

1. Classroom activities:

a. Theoretical classes: theoretical concepts of the subject will be explained and practical examples will be developed.

b. Monitored practical work, problem lessons: Students will develop examples and solve problems or case studies concerning the theoretical concepts studied.

2. Monitored Autonomous activities: These activities will be monitored by teachers of the subject. The student will be allowed to perform these activities in the institution, under the supervision of a teacher of the department.

3. Reinforcement activities: Through a virtual education portal (Moodle) several activities that reinforce the basic contents of the subject will be conducted. These activities will be customized and monitored.

The subject consists of 6 ECTS, which represent 150 hours of student work on the subject during the semester. 40% of this work (60 h.) will take place in the classroom, and the rest will be autonomous. A semester consists of 15 teaching weeks.

To schedule the timing the reaching week is used as a reference. In that period of time the student must devote 10 hours to the study of the subject.

4.3.Syllabus

Unit 1. General Concepts

Unit 2. The Wind

Unit 3. Characterization of waves.

Unit 4. Propagation of waves

Unit 5. Geomorphology and coastal hydrodynamics.

Unit 6. Slope Dams.

Unit 7. Vertical Dams

Unit 8. Maritime Work Project

Unit 9. Implementation Analysis and Plan.

Unit 10. Dredging

4.4.Course planning and calendar

Calendar of sessions and presentations

Then the contents are displayed at each week teaching. These correspond to the issues presented in the content of the subject. (They may be subject to change to adapt to changes and unforeseen events in the school calendar).

Week 1: Unit 1. General Concepts

Week 2: Unit 2. The Wind

Week 4: Unit 3. Characterization of waves.

Week 6: Unit 4. Propagation of waves

Week 8: Unit 5. Geomorphology and coastal hydrodynamics.

Week 10: Unit 6. Slope Dams.

Week 11: Unit 7. Vertical Dams

Week 13: Unit 7/8. Vetical Dams, Maritime Work Project

Week 14: Unit 8/9. Maritime Work Project Implementation Analysis and Plan.

Week 15:Unit 10. Dredging. Assessment.

Final exams dates will be published formally in http://www.eupla.es/secretaria/academica/examenes.html. The final calendar of the corresponding academic year can be viewed on the website of the school http://www.eupla.es.

The program of the course is structured around two complementary content components:

- theorists

- practical

Class schedules, and the distribution of group practices will be transmitted to students by the teacher at the beginning of the academic year and will be published on the Moodle platform as well as on the university website (www.eupla.es).

Within the final tests, there will be obligatory exams for all the students. These dates will be published on the website of the university (www.eupla.es) at the beginning of the academic year.

The dates of other activities (such as assessing tests, seminars, compulsory practices, task deadlines ...) will be published at the beginning of the academic year, reported by the teacher to the students the first school day, and they will also be published through the Moodle platform.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=28767&year=2019