

Coastal Zone Planning and Management (250602)

General information

School:	ETSECCPB
Departments:	Departament d'Enginyeria Civil i Ambiental (DECA)
Credits:	5.0 ECTS
Programs:	MÀSTER UNIVERSITARI ERASMUS MUNDUS EN ENGINYERIA I GESTIÓ COSTANERA I MARÍTIMA, pla 2022 - (codi pla 1525), MÀSTER UNIVERSITARI ERASMUS MUNDUS EN ENGINYERIA I GESTIÓ COSTANERA I MARÍTIMA, pla 2013 - (codi pla 1090)
Course:	2023/2024

Main teaching language at each group

- Group 10Q2 English (Q2)

Faculty

Responsible faculty: Jose Antonio Jimenez Quintana

Teacher: Jose Antonio Jimenez Quintana

Generic objectives

The main aim of this course is to bring up students in the field of Planning and Management of the Coastal System. This will be done by adopting a multi-disciplinary and inter-disciplinary view of the coastal zone. Conflicts and problems of natural and anthropogenic origins will be analyzed by using tools from different disciplines.

Skills

Specific skills

Management techniques.

Environmental issues before and after construction of e.g. a port.

Entrepreneurship and corporate social responsibility.

How climate change uncertainties can be managed to reduce risks when designing and operating resilient infrastructure.

Perform risk management (concepts and techniques).

Know how to make the stakeholders and community to work together to make a project acceptable and wanted.

Coastal vulnerability within a sustainable framework.

Field campaigns and data treatment to evaluate problematic situations and plan/design solutions.

Developing beach management strategies for real-world coastal systems.

The basis behind climate change and its effect on the coast.

How to cooperate with administrations and private companies.

Design coastal interventions.

Understand and predict the impacts of coastal interventions.

Offer alternatives to hard coastal engineering.

Compute the risk, vulnerability and hazard analysis including the decadal (climatic) scale.

Generic skills of subject

Design methods for ports, waterways and other coastal facilities.

Dredging and disposal solutions for contaminated sediments.

Social responsibility of business and entrepreneurship.

Develop knowledge and understanding of the coastal environment at an advanced level, applying classic (hard and soft) coastal engineering complemented with building with nature concepts, with ability to analyse, evaluate, assess and synthesis of data and information from different sources with contemporary techniques and technologies.

Propose creative and innovative solutions by themselves or as a work group for current and future problems by enhancing their own interpersonal understanding, work as a team and oral and written communication skills.

Take a leadership role in the community, exerting awareness of ethical, cultural and social issues within a global context in the exercise of their professional skills and responsibilities.

ECTS credits: total hours of student work

		Dedication	
		Hours	Percent
Supervised Learning	Theory	29.00	64.4%
	Assignments	8.00	17.8%
	Laboratory	8.00	17.8%
	Supervised activities	0.00	0.0%
Self-Learning		80.00	

Contents

Introduction

Dedication

1.0h. Theory

Description

Introduction to the course Presentation of course work.

Objectives

Course structure. Sources of information and data. Practical works

The coastal system

Dedication

3.0h. Theory + 1.0h. Assignments

Description

Presentation of the key concepts related to the coastal system. The natural system. Biophysical environment Definition of the coastal system as a multi-component system. Zoning Dominant physical processes. The "human" system. Socio-economic environment Zoning of the marine environment. Main economic activities. Ecosystem services Functions that support marine ecosystems Concept of ecosystem services Valuation Environmental services in the coastal zone

Definition and characterization of the coastal zone in a real case.

Objectives

Characterization of the coastal system and its multiple components

Application of the concepts to a real case.

Coastal problems and conflicts

Dedication

5.0h. Theory + 1.0h. Assignments

Description

Conflicts in coastal areas. Conflict analysis. Main problems of anthropogenic origin. Problems of climatic/natural origin.

Conflict analysis in a real case.

Main pressures and impacts in the Mediterranean.

General status and assessment of current status of coastal zone

Objectives

Analysis of coastal problems and conflicts.

Application of the methods seen to a real case.

Analysis of the state of the Mediterranean coast. Identification of impacts, conflicts and problems.

Analysis frameworks and tools

Dedication

3.0h. Theory

Description

Analysis frameworks. PSR, DPSIR and DPSWR models. SWOT analysis Indicators and indices. System of indicators for the management of the marine environment. Actors in the management of the marine/coastal environment. Methods of public participation.

Objectives

Introduction of the main tools in cost management.

Recreational coastal management

Dedication

5.0h. Theory + 2.0h. Assignments

Description

Coastal tourism The recreational function in coastal management. Management of beaches. Recreational load capacity Evaluation of the load capacity of beaches Safety on beaches. Evaluation of the quality of the beaches.

Assessment of recreational function in a real case. Application of the studied concepts.

Objectives

Analysis of beach management focused on recreational use.

Practical application of the subject.

Coastal management from the point of view of protection

Dedication

10.0h. Theory + 4.0h. Assignments

Description

Damage in the coastal area. The protection function in coastal management. Main natural risks. Methods for assessing vulnerability and coastal risk on a large scale using indicators. Identification of hotspots. Analysis of coastal erosion at different scales. Using the SPRC analysis framework. Quantification of the risk associated with the impact of storms. Erosion and flooding. Coastal risk assessment framework for the impact of extreme events.

Application of the methods seen to assess the need for protection in a coastal stretch.

Impact of climate change in coastal areas. Coastal adaptation strategies. Adaptation routes.

Evaluation of the impact of climate change on a coastline. Proposal for an adaptation strategy.

Objectives

Management of the coast to promote the protection function. Tools to use at different scales.

Application of the tools and methods studied to a real case.

Introduce the influence of climate change on coastal management.

Application of the concepts and tools studied to a real case.

Integrated management in coastal areas

Dedication

2.0h. Theory

Description

Theoretical and conceptual aspects.

Methodological aspects.

Strategic aspects.

The concept of ecosystem-based management.

Main European application directives in the field of marine environment management

Objectives

Introduction of integrated coastal zone management.

Case study

Dedication

8.0h. Laboratory

Description

Directed course work, where students in groups must apply the tools presented during the course to a real problem in the coastal area.

Objectives

Application of the concepts and tools seen throughout the course to a real case.

Activities

Grading rules (*)

(*) The evaluation calendar and grading rules will be approved before the start of the course.

The mark of the course is obtained from the ratings of continuous assessment and their corresponding laboratories and/or classroom computers.

Continuous assessment consist in several activities, both individually and in group, of additive and training characteristics, carried out during the year (both in and out of the classroom).

The teachings of the laboratory grade is the average in such activities.

The evaluation tests consist of a part with questions about concepts associated with the learning objectives of the course with regard to knowledge or understanding, and a part with a set of application exercises.

Test rules

Teaching methodology

The course consists of 2 hours per week of classroom activity (large size group) and 0.8 hours weekly with half the students (medium size group).

The 2 hours in the large size groups are devoted to theoretical lectures, in which the teacher presents the basic concepts and topics of the subject, shows examples and solves exercises.

The 0.8 hours in the medium size groups is devoted to solving practical problems with greater interaction with the students. The objective of these practical exercises is to consolidate the general and specific learning objectives.

The rest of weekly hours devoted to laboratory practice.

Support material in the form of a detailed teaching plan is provided using the virtual campus ATENEA: content, program of learning and assessment activities conducted and literature.

Although most of the sessions will be given in the language indicated, sessions supported by other occasional guest experts may be held in other languages.

Office hours

Any day from 08:00 to 14:00 on request and after confirmation

Basic bibliography

- Kay, R.; Alder, J. **Coastal planning and management**. Taylor & Francis. Oxon. 2005. ISBN 0415317738.
- Clark, J.R. **Coastal zone management handbook**. Lewis Publishers. Boca Raton. 1996. ISBN 1566700922.
- Masselink, Gerd ; Gehrels, Roland. **Coastal Environments and Global Change**. Wiley. Chichester : Wiley. 2014. ISBN 9780470656594.
- Kamphuis, J.W. **Introduction to coastal engineering and management**. World Scientific. Singapore. 2010. ISBN 9789812834843.
- Salomon, M.; Markus, T. (eds.). **Handbook on marine environment protection: science, impacts and sustainable management**. Springer International Publishing. Cham, Switzerland.

2018. ISBN 9783319601564.

- Crowe, T.P.; Frid, C.L.J. (eds.). **Marine ecosystems: human impacts on biodiversity, functioning and services**. Cambridge University Press. Cambridge. 2015. ISBN 9781107037670.



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