

STUDY GUIDE

Innovative methods to assess the distribution of marine ecosystems

Organised by

- University of Cantabria (UC)

Originally developed in the context of Creative Commons education materials created by the TRASMARES ERASMUS+ project (2019-1-ES01-KA203-065536, "Specialized training on applied tools for sustainable marine ecosystems"), coordinated by the University of Cantabria (UC).



1. IDENTIFYING DATA	
Course Name.	Innovative methods to assess the distribution of marine ecosystems
Coordinating University.	University of Cantabria (UC)
Course Field(s).	Sustainability
Related Study Programme.	Course included in the University Microcredential in Sustainable Marine Ecosystems (TRASMARES)
ISCED Code.	051101. Biology 053201. Marine sciences 071201. Environmental engineering 073202. Civil engineering
Sustainable Development Goals	SDG 04. Quality education SDG 13. Climate action SDG 14. Life below water
Study Level.	MECU 7 (Master or 240 ECTS Degree)
Number of ECTS credits allocated.	2 ECTS
Mode of Delivery.	Online self-study
Language of Instruction.	English, with subtitles in Spanish, Italian and Portuguese
Course Dates.	03.10. 2025 – 19.12.2025
Schedule of the course.	The course can be attended from October until mid-December 2025 at any time. Course materials and assessment forms are fully online and can be checked at any point. Lectures are asynchronous and can be reviewed at any time
Key Words.	Coastal ecosystems, structural and functional diversities, ecosystem services, zonation profiles, distribution of species, modelling
Prerequisites and co-requisites.	No previous requirements established
Number of EUNICE students that can attend the Course.	Unlimited
Course inscription procedure(s).	Requires registration on the TRASMARES University Microcredential: https://web.unican.es/estudios/estudios-propios/informacion-estudios-propios-de-posgrado/detalle-estudios-propios?e=1116



2. CONTACT DETAILS	
Department.	Environmental Hydraulics Institute (IHCantabria)
Name of Lecturer.	• Prof. José A Juanes (Coordinator) • Dr. Elvira Ramos (Director)
E-mail.	juanesj@unican.es ramose@unican.es
Other Lecturers.	Academic staff from UC-IHCantabria in charge of this course: • Prof. Araceli Puente • Dr. Bárbara Ondiviela • Dr. Camino Fernández • Dr. Cristina Galván • Dr. Inés Mazarrasa • Dr. María Recio • Dr. Samuel Sainz International advisors from TRASMARES project: • Prof. Laura Airoidi (University of Padova) • Dr. Joao Neto (University of Coimbra) External contributors of CC materials from the TRASMARES project: • Dr. Joanne Wong (Freelance environmental consultant) • Prof. Federica Constantini (University of Bologna) • Prof. Sonia Silvestri (University of Bologna) • Prof. Eva Turicchia (University of Bologna) • Prof. Massimo Ponti (University of Bologna) • Dr. José M. Álvarez (University of Oviedo) • Dr. Felipe Fernández (Freelance IT consultant)

3. COURSE CONTENT
Teaching materials of this MOOC were co-created, under creative commons licence, in the TRASMARES project “Specialized training on applied tools for sustainable marine ecosystems”, funded by the EU ERASMUS+ programme (2019-1-ES01-KA203-065536, 2019-22) and developed through the collaboration of academics and researchers from the Institute of Environmental Hydraulics of the University of Cantabria, coordinator of the project, the University of Bologna and the University of Coimbra.



The course reviews the main characteristics of the different coastal ecosystems, explaining the concept of diversity and the different approaches to characterise the different species, as well as their spatial and temporal distribution. It also introduces the ecosystem services paradigm; clarifies the concepts of their functions, services and benefits; and shows the different ways to classify and quantify them. In addition, students can learn the direct and indirect approaches to characterising the distribution of ecosystems. In this way, students acquire a broad understanding of the most innovative methodologies and tools available for determining the distribution and functions of coastal ecosystems.

4. LEARNING OUTCOMES

- Students will know the main structural and functional characteristics of coastal ecosystems.
- Students will discover how to characterize and evaluate the most important coastal ecosystem services.
- Students will learn different traditional and innovative techniques to quantify the current and potential distribution of communities and species.

5. OBJECTIVES

This course aims at learning the most representative coastal ecosystems, their characteristics, functions and services, and the approaches currently used to analyze their distribution.

6. COURSE ORGANISATION

UNITS

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| 1. | Introduction to marine ecosystems |
| 2. | Marine ecosystems characterization |
| 3. | Functions, services and benefits of marine ecosystems |
| 4. | Direct approaches to characterize the distribution of ecosystems |
| 5. | Indirect approaches to characterize the distribution of ecosystems |

LEARNING RESOURCES AND TOOLS

The learning resources and assessment tools of the course are available at the UC Moodle Platform.



PLANNED LEARNING ACTIVITIES AND TEACHING METHODS

Students will have access to video materials, written course contents, and automatic online evaluation tests in Moodle online environment. Students can review the materials and do the assessments at their own pace during the period of course delivery since. The course is asynchronous and can be reviewed at any time. Students' activity in Moodle is expected to consist of the following:

- Watching the video materials available on the course site.
- Reading and familiarization with the text materials available on the course site.
- Taking the evaluation tests that measure students' knowledge and skills in content areas.

The course is completed by independently working and by taking the exams which consists of multiple-choice questions covering the course topics. The course is graded "passed" or "failed".

As an additional optional activity, each sub-topic will have a forum for students to share their questions, discussions or doubts. It will be moderated by the professors when necessary. All students are free to participate and post their queries.

7. ASSESSMENT METHODS, CRITERIA AND PERIOD

To complete the course, you must:

- View the materials in each Module, going through all Sub-Topics.
- Correctly answer at least 50% of each of the Automatic Online Assessments.
- Complete the post-survey of the course.

OBSERVATIONS

8. BIBLIOGRAPHY AND TEACHING MATERIALS

Teaching materials are available on the course at the dedicated Moodle platform. Literature recommendations are also outlined in the course contents

