

# STUDY GUIDE

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## **Human Activities and Vulnerability 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	
<b>Course Name.</b>	Human Activities and Vulnerability of Marine Ecosystems
<b>Coordinating University.</b>	University of Cantabria (UC)
<b>Course Field(s).</b>	Sustainability
<b>Related Study Programme.</b>	Course included in the University Microcredential in Sustainable Marine Ecosystems (TRASMARES)
<b>ISCED Code.</b>	051101. Biology 053201. Marine sciences 071201. Environmental engineering 073202. Civil engineering
<b>Sustainable Development Goals</b>	SDG 04. Quality education SDG 13. Climate action SDG 14. Life below water
<b>Study Level.</b>	MECU 7 (Master or 240 ECTS Degree)
<b>Number of ECTS credits allocated.</b>	2 ECTS
<b>Mode of Delivery.</b>	Online self-study
<b>Language of Instruction.</b>	English, with subtitles in Spanish, Italian and Portuguese
<b>Course Dates.</b>	13.05. 2026 – 29.06.2026
<b>Schedule of the course.</b>	The course can be attended from may until mid-june 2026 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
<b>Key Words.</b>	Socio-ecological systems, DPSIR, drivers, pressures, responses, impacts, ecological status, management actions
<b>Motivational Phrase.</b>	Biodiversity is the foundation of ecosystem services to which human well-being is intimately linked, including both natural and managed ecosystems.
<b>Prerequisites and co-requisites.</b>	No previous requirements established
<b>Number of EUNICE students that can attend the Course.</b>	Unlimited
<b>Course inscription procedure(s).</b>	Requires registration on the TRASMARES University Microcredential:  <a href="https://web.unican.es/estudios/estudios-propios/informacion-estudios-propios-de-posgrado/detalle-estudios-propios?e=1116">https://web.unican.es/estudios/estudios-propios/informacion-estudios-propios-de-posgrado/detalle-estudios-propios?e=1116</a> .



2. CONTACT DETAILS	
<b>Department.</b>	Environmental Hydraulics Institute (IHCantabria)
<b>Name of Lecturer.</b>	<ul style="list-style-type: none"> <li>• Prof. José A Juanes (Coordinator)</li> <li>• Dr. María Recio (Director)</li> </ul>
<b>E-mail.</b>	<a href="mailto:reciom@unican.es">reciom@unican.es</a>
<b>Other Lecturers.</b>	<p>Academic staff from UC-IHCantabria:</p> <ul style="list-style-type: none"> <li>• Prof. Araceli Puente (UC)</li> <li>• Dr. Bárbara Ondiviela</li> <li>• Dr. Cristina Galván</li> <li>• Dr. Elvira Ramos</li> <li>• Dr. Xabier Guinda</li> <li>• MsC. Francisco Royan</li> </ul> <p>International advisors from TRASMARES project:</p> <ul style="list-style-type: none"> <li>• Prof. Laura Airoidi (University of Padova)</li> <li>• Dr. Joao Neto (University of Coimbra)</li> </ul> <p>External contributors of CC materials from the TRASMARES project:</p> <ul style="list-style-type: none"> <li>• Dr. Joanne Wong (freelance environmental consultant)</li> </ul>

3. COURSE CONTENT
<p>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 Environmental Hydraulics Institute of the University of Cantabria, coordinator of the project, the University of Bologna and the University of Coimbra.</p> <p>The course guides participants through the Ecosystem-Based Approach (EBA) framework to address the management of marine ecosystems, their sustainability and the benefits they bring to society. To do so, it first introduces participants to specialised techniques (DPSIR) to characterise the main human needs, the activities carried out by society to meet them, and the consequences of these actions for the environment and society. Building on that knowledge, the course explains tools to identify strategies to address environmental deficiencies, with the aim of ensuring sustainability and securing sufficient ecosystem benefits.</p>



#### 4. LEARNING OUTCOMES

- Students will know the main needs of coastal populations.
- Students will analyse the activities developed by society to meet human needs.
- Students will discover the consequences for the environment and for society itself.
- Students will elaborate the possible strategies to reduce environmental damage and improve the benefit to human populations.

#### 5. OBJECTIVES

This course aims at understanding the components of the DPSIR framework, as a basic management tool for the conceptualisation and assessment of the most relevant problems existing in coastal systems.

#### 6. COURSE ORGANISATION

##### UNITS

- |    |                                      |
|----|--------------------------------------|
| 1. | Introduction to the DPSIR framework  |
| 2. | Driving forces                       |
| 3. | Pressures                            |
| 4. | Changes of status                    |
| 5. | Impacts on the well-being of society |
| 6. | Response with measures               |

##### 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 familiarisation 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.

