



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Habitat Mapping for Ecosystem-based Management of the Deep Sea

2324-2-128R-HABM

Title

Habitat Mapping for Ecosystem-based Management of the Deep Sea

Teacher

Prof. Alessandra Savini

Language

English

Short description

The course focuses on presenting recent data and studies that highlight the growing demand for resources and the decline of land-based sources as the main trigger for expectations toward the ocean as an engine of human economic development. This race for marine resources is also known as blue acceleration and represents an unprecedented challenge.

The course is therefore designed to explain why it is critical to manage this new reality in a sustainable and equitable way for the future well-being of humanity and to address these challenges. Students will be educated

about the latest advances in ocean technology that promote comprehensive, multiscale mapping of the deep sea in order to obtain crucial information about the extent and distribution of habitats found there. The course has a strong multidisciplinary nature and focuses on the role of artificial intelligence, computer vision and image analysis in habitat characterization. Some case studies will also be presented.

The program includes lectures and seminars. The course is centered on showing data and recent studies that are marking the increasing demand for resources and the decline of terrestrial sources, as the main trigger for the expectations towards the ocean as a driver of human economic development. This race for marine resources is also known as the blue acceleration, and represents an unprecedented challenge.

The course is therefore designed to explain why it is crucial to explore how to manage this new reality in a sustainable and equitable way for the future well-being of humankind, and how to tackle these challenges. Students will be trained on the latest advances in ocean technology that promote a comprehensive and multiscale mapping of the deep-sea in order to obtain crucial information on the extent and distribution of deep-sea habitats. The course has a strong multidisciplinary nature and is focused on the role of Artificial Intelligence, computer vision and Image Analysis in habitat characterization. Some case studies will be also presented.

Our programme features frontal lessons and seminar.

Target audience

PhD Students or early-career researchers in Marine Science, specifically those focusing on marine geomorphology and ecology, oceanography, environmental science, and related disciplines, in particular:

- Those with a background in Geographic Information Systems (GIS), remote sensing, and spatial analysis who are interested in applying their skills to marine environments and deep-sea ecosystems.
- Those interested in ecosystem-based management, marine conservation, and the creation of marine protected areas, particularly in deep-sea contexts.
- Those focused on developing or utilizing new technologies for deep-sea exploration, including autonomous vehicles, sonar systems, and other mapping technologies.

Maximum number of participants

14

Assessment method

Multiple-choice test and presentation of a project idea to answer questions of sustainable management of marine ecosystems

CFU / Hours

1 CFU / 8 hours

Teaching period and mode

The course will be delivered in September 2024 through lectures including videos, case studies and self-assessment tests.

Sustainable Development Goals

INDUSTRY, INNOVATION AND INFRASTRUCTURE | LIFE BELOW WATER
