UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Introduction To Ocean Geography

2526-3-E3401Q053

Aims

To acquire the knowledge of the main biotic and abiotic components in marine systems to understand the funcioning of the planet and to acquire an adequate knowledge in the main techniques of geological-geomorphological prospecting at sea (DD1). Such knowledge will resuls int the capacity to read bathymetric and bathymorphological maps and to interpret marine sedimentary sequences in terms of paleoenvironments (DD2). The interlink among the various fields of knowledge, promoted by the teachers, will require the development ofcritical thinking, that will be assessed during the oral examination (DD3), along with the capacity to use an appropriate scientific language (DD5).

Contents

Introduction to the marine environment in its various components.

Main physical, chemical and biological characteristics of water masses; techniques of observation, measurement and sampling of water masses.

Marine sediments: nature, composition and origin of terrigenous, volcanoclastic, neritic, pelagic, hydrothermal and authigenic sediments.

The seafloor: physiography, geomorphology and processes: analysis and sampling techniques.

Detailed program

Physical, chemical and biological characteristics of the water masses: insolation, temperature, salinity, density,

horizontal and vertical circulation, waves, tides, dissolved gases (O2 and CO2), nutrients, primary production. Organic matter in the marine environment and the C cycle. Measuring and sampling the water column and assessing biogeochemical fluxes (CTDs, rosettes with sampling bottles, sediment traps).

Nature and origin of marine sediments: lithogenic, volcanogenic, neritic, pelagic, hydrotemal, authigenic sediments.

Seafloor sampling techniques: grabs, box-corers, multi-corers, gravity and piston corers; ocean drilling for scientific research.

Geology and oceanographyc explorations. Fundamentals of submarine geomorphology. Marine physiographic provinces and their large morpho-structural units. Continental margins and ocean basins. Drivers of seafloor and coastal geomorphic changes.

Technologies of observation and sampling of the marine system. Ship positioning and navigation. Acoustic seafloor mapping.

Bases of paleoceanography

Prerequisites

All exams of the first year and the foreign language proficiency test

Teaching form

24 two-hour Lectures in person, Delivered Didactics (6 ETCS, 48 hours)

Textbook and teaching resource

Recommended text: Trujillo and Thurman, 2011. Essentials of Oceanography. 10th Edition. Prentice Hall

Slides of lessons provided by the teacher on e-learning

Semester

second semester

Assessment method

Four self-assessment tests on the different themes explained in classes, to be done during the semester, or oral examination.

The tests are multiple choice or True-false quiz, constructed to assess the theoretical knowledge acquired by the students. Passing all 4 tests with at least 18/30 allows skipping the oral examination.
The oral examination consists in 2 open questions related to the themes explained during classes. During the oral exam, the teachers will evaluate the acquired knowledge and the acquired capacities in terms of appropriate language and mastery of the themes.

The final evaluation, in /30, derives from the average of the scores of the 4 tests or from the evaluation of the oral examination.

Office hours

Any time, upon request by e-mail followed by confirmation by the professor

Sustainable Development Goals

AFFORDABLE AND CLEAN ENERGY | LIFE BELOW WATER