

## Concepts and Practices in Biological Oceanography and Marine Ecology - Part 1 (C004344)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 6.0** **Study time 150 h**

**Course offerings in academic year 2026-2027**

A (semester 2) English Gent

**Lecturers in academic year 2026-2027**

Méjanelle, Laurence

PARIS64 lecturer-in-charge

Lantoine, François

PARIS01 co-lecturer

**Offered in the following programmes in 2026-2027**

[International Master of Science in Marine Biological Resources](#)

crdts	offering
6	A

**Teaching languages**

English

**Keywords**

- Physico-chemical characteristics of coastal sediments and of coastal seawater
- Hydrodynamics and transport
- Environmental descriptors
- Coastal environment
- Sediment characteristics
- Seawater geochemical characteristics
- Environmental quality
- Organic carbon
- Pollutants, Polycyclic Aromatic Hydrocarbons
- Marine primary productivity
- Nutrients
- Colorimetry
- Gas chromatography coupled to mass spectrometry.
- Photosynthetic pigments measurement

**Position of the course**

The course provides a methodological approach to the physical and geochemical characteristics of the coastal environment. It offers the opportunity to learn how to analyze bulk parameters and trace concentrations of pollutants in contrasted coastal habitats, benthic and pelagic. The coupling between nutrient abundance, productivity and coastal eutrophication, the relationships between the physical structure of the sediment and reducing processes will be addressed. The course is the first part of a 3 courses package, and sets the ground for the courses addressing its biodiversity (Concepts and Practices in Biological Oceanography and Marine Ecology -Part 2) and ecological relationships (Concepts and Practices in Biological Oceanography and Marine Ecology -Part 3). Students will participate in a learning experiences in microcosms designed by themselves to test how nutrients shape phytoplankton productivity and community.

**Contents**

- The class is based on intensive laboratory work and personalized mentoring and support.
- A limited set of samples of coastal sediments will be analyzed for:
- Bulk geochemical characteristics: laser diffraction spectroscopy measures of granulometry, porosity, organic matter, voltametric measurements of O<sub>2</sub> and

H<sub>2</sub>S by microelectrodes.

- Environmental quality parameter of the MSFD will be measured in sediments: polycyclic aromatic hydrocarbon concentrations determined by gas chromatography coupled to mass spectrometry.
- A limited set of samples of coastal and lagoon seawater will be analysed for: nutrients (ammonium, Nitrate, phosphates), abundance of phytoplankton and microbial cells by flow cytometry, and chlorophyll concentrations (fluorometric measurement).

#### **Initial competences**

None

#### **Final competences**

- 1 Characterize physical and chemical properties of the Seawater and Sediment compartments.
- 2 Characterize elements of biogeochemical cycle in the Seawater and sediment.
- 3 Characterize the abiotic marine environment and its state or quality.
- 4 Design experiments or observations that test hypotheses.
- 5 Understand different analytical approaches to quantify an environmental parameters and its quality controls.

#### **Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

#### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

#### **Teaching methods**

Lecture, Practical, Independent work

#### **Study material**

None

#### **References**

Will be provided at the beginning of the course.

#### **Course content-related study coaching**

#### **Assessment moments**

end-of-term and continuous assessment

#### **Examination methods in case of periodic assessment during the first examination period**

Written assessment

#### **Examination methods in case of periodic assessment during the second examination period**

Written assessment

#### **Examination methods in case of permanent assessment**

Oral assessment, Assignment

#### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible

#### **Extra information on the examination methods**

Students are evaluated by a written examination (weight 60% of the score) and a group project (weight 40% of the score).

#### **Calculation of the examination mark**

- 60% for the Written examination
- 40% for the Oral presentation