

protect marine coastal environments.

5 Students will have acquired transferable tools for:

- 1 Designing and performing mesocosm experiments
- 2 Studying meiofauna: extraction method, biomass estimation, taxa identification
- 3 Determining the origin and quality of organic matter in sediments with lipid biomarkers
- 4 Measuring solute fluxes: chemical sensors, nutrient analyses...
- 5 Learning to conduct multidisciplinary research and critical thinking
- 6 Interpreting and reporting scientific results

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

Seminar, Lecture, Project

Extra information on the teaching methods

The course is organized around two practical projects. For each project, the concepts are briefly presented during a lecture, and then practical works enable to illustrate the concept and methods of study. Students will carry out experiments, perform biochemical and chemical analyzes and sort and identify the meiofauna. They will then interpret their results and compare them to the literature. The expensive practical and laboratory trainings will thus give transferable skills to the students.

The first practical work (PW1) aims to demonstrate the existence of the benthic-pelagic coupling. We will study the response of the benthic compartment by simulating a phytoplankton bloom in mesocosms. O₂ consumption, use of nitrates / nitrites and release of silicates will be monitored during the experiment. In parallel, we will see that the organic matter degrades quickly in the sediments. The 2nd practical work (PW2) focuses on the fate of organic matter. We will characterize the origin and the reactivity of the organic matter using the analysis of lipid biomarkers in GC-MS (gas chromatography coupled with mass spectrometry). We will produce chemical profiles using sensors to calculate the diffusive fluxes. We will investigate the functional role of meiofauna by determining abundance, biomass and respiration rate in different habitats (posidonia meadows, sandy bottoms and muddy bottoms).

Learning materials and price

All material necessary is provided to students.

References

A selection of scientific publications is provided to students through the MOODLE platform.

Students may also read :

- Biogeochemistry of estuaries T. Bianchi
- Marine Biology J.S. Levinton
- Le golfe du Lion A. Monaco et al.
- Ecology of Coastal Waters: With Implications For Management K.H. Mann
- Global coastal change I. Valiela

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 examination

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

Written examination

Examination methods in case of permanent 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 (interpretation of figures from scientific articles) for 60% of the mark and an oral evaluation (powerpoint presentation of a practical) for 40% of the mark.

Calculation of the examination mark

- 60% Written Exam
- 40% Practical Assignments