

Marine Ecosystem Modelling (C004306)

Due to Covid 19, the education and assessment methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

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

Credits 6.0 **Study time 150 h** **Contact hrs** 60.0h

Course offerings in academic year 2021-2022

A (semester 1) English Gent

Lecturers in academic year 2021-2022

Lombard, Fabien PARIS64 lecturer-in-charge
Stemmann, Lars PARIS01 co-lecturer

Offered in the following programmes in 2021-2022

	crdts	offering
International Master of Science in Marine Biological Resources	6	A

Teaching languages

English

Keywords

Ecosystem modeling, Population dynamics, Individual based modeling

Position of the course

One main challenge in marine ecology is to train biologists and ecologists to develop and use mathematical models to solve scientific questions or manage complex systems. The aim is to give students the skills to understand, conceptualize, build, and operate different kinds of models focused on marine ecosystems. This teaching unit is based around a very practical approach where all lectures are followed by practical computer-based labs. Students will also have to conceive and write their own models.

Contents

All the following topics will be tackled through courses followed by practical work:

- Ecophysiology and functional responses in Energetic and ecophysiological models
- Population dynamics, communities dynamics
- Physical- biological ecosystem models from 0 to 3 spatial Dimensions
- Individual Based Models and Lagrangian models
- Trait based modeling

Initial competences

Having completed first year of the master
Marine ecology concepts, Basic mathematical background (reminders will be provided), Knowing how to use a computer (coding will be taught)

Final competences

- 1 Ability to understand, conceive, build, and operate a simple model.
- 2 Ability to understand how the different hypothesis included in a model control its behavior.
- 3 Ability to understand the different uses of a model for scientific (for example biogeochemical budget) or operational (for example conservation) purposes, in order to solve the different questions it can respond to, and its limitations.
- 4 Ability to discuss with mathematicians or physical oceanographers on complex

model development and usages.

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: plenary exercises, Practicum, Demonstration, Group work, Guided self-study, Seminar, Lecture, Self-reliant study activities, Project

Learning materials and price

References

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

Calculation of the examination mark

- 50% Written Exam
- 50% Practical Assignments