

UM5MRM34 PELAGIC RESPONSE TO ENVIRONMENTAL CHANGES		
6 ECTS	<i>Keywords</i>	pelagos, experimental work, ecophysiology, bioindicators, disturbances
M2	<i>Managers</i>	Fabien LOMBARD, Stéphane GASPARINI (LOV, Villefranche)
Villefranche	<i>Professors</i>	Laure MOUSSEAU (LOV, Villefranche)
	<i>Track</i>	Marine ecosystem functioning and global changes

Description

Format

Teaching

Teaching is divided into lectures (30h; mornings), tutorials (3h), and above all a supervised experimental project carried out in the afternoons (around 30h).

The experimental project involves designing an experiment testing the effect of an environmental disturbance (chosen at the students' discretion) on either phytoplankton growth or zooplankton respiration (student's choice).

Evaluation

Theoretical coursework is assessed through a written exam (2h). The project, resulting from the individual experiment carried out by the student, is assessed through an oral presentation (~10-15 min depending on class size).



Summary

Environmental constraints, whether natural or caused by human activity, can disrupt pelagic organisms in many ways and across different scales of time, space, and biological dimensions (from molecules to ecosystems). The aim of this course is to explore the various constraints affecting organisms and ecosystems, and to acquire the knowledge needed to measure them experimentally. A large part of the practical work is devoted to building suitable protocols in order to carry out experiments designed by the students. The different mechanisms responsible for the biological response to environmental changes will be addressed

through various observational and experimental results.

Learning objectives

By the end of this course, students will be able to:

1. describe and interpret the effect of different environmental forcings (physico-chemical or biological) on the response of pelagic organisms from the individual to the global scale;
2. identify and assess the relative effect of different environmental factors while critiquing methodological weaknesses;
3. design their own experiments to observe the effect of the environment on certain physiological parameters of phytoplankton and zooplankton;
4. carry out, plan, and interpret these various experiments in order to calculate their effects, justify the methodological choices, and critique any potential biases.

Prerequisites

Knowledge of biological oceanography, knowledge of aquatic organism physiology, basic notions of statistical analysis of experimental observations

Bibliography

N/A

Course structure

The course is roughly divided into three blocks.

The first two weeks are devoted **in the mornings** to acquiring new knowledge through lectures specifically exploring the influence of different environmental stressors on pelagic organisms, either in an integrative manner (known changes in the pelagic realm via time series) or in a targeted manner (temperature, trophic transfers, gelatinous organism blooms, nutrient effects, adaptive and behavioral responses, UV, etc.). **The afternoons** are devoted to experimental work, from designing an experiment and its protocol to carrying it out and interpreting the results. It will be your experiment — as long as it is technically feasible and scientifically relevant, we will try to make it happen. Finally, the last week is devoted to analyzing the experiment, preparing the oral presentation, and exams.

Note: This document is for informational purposes. The details of the content and format of the courses and evaluations may change from year to year.