

## DESCRIPTION OF THE CLASS

CODE	TITLE INSTRUMENTATION AND ACQUISITION OF DATA IN OCÉANOGRAPHY
<b>MU5MRM31</b> <b>6 ECTS</b>	<b>KEYWORDS:</b> Instrumentation, Mission plan, Work at sea, Methodology, Observation
<b>M2</b>	<p><b>PROFESSORS IN CHARGE:</b> Jean-Olivier IRISSON, Villefranche sur mer, Sorbonne Université Laure MOUSSEAU, Villefranche sur mer, Sorbonne Université</p> <p><b>OTHER PROFESSORS:</b> Laurent COPPOLA, Villefranche sur mer, Sorbonne Université Stéphane GASPARINI, Villefranche sur mer, Sorbonne Université Christophe MIGON, Villefranche sur mer, Sorbonne Université Lars STEMMANN, Villefranche sur mer, Sorbonne Université</p>
<b>CLASS MODALITIES</b>	
<p><b>TEACHING MODALITIES.</b> 30 hours of lessons, 15 hours of tutored project (preparation of an oceanographic mission plan), 2 days of embarkation on ships of the French Oceanographic Fleet, 15 hours of discovery and application of laboratory techniques (for the processing of samples collected at sea).</p> <p><b>EVALUATION PROCEDURES.</b> The theoretical courses are evaluated by a written exam (2 hours). The project, carried out in pairs, consists of writing an oceanographic mission plan following the template of the National Coastal Fleet Commission, which is evaluated in writing (5 pages) and after a defence (~10 min).</p>	
<b>CLASS SUMMARY</b>	
<p>The objective of the IADO teaching unit is to give you the experience of an oceanographic campaign, from its design to its practical implementation. It relies on the technical tools present in the station, for research purposes and gradually makes you autonomous in their use.</p> <p>Its principles and organization are described here: <a href="https://www.youtube.com/watch?v=fLjwXgLgV_0">https://www.youtube.com/watch?v=fLjwXgLgV_0</a></p>	
<b>TEACHING GOALS</b>	
<p>At the end of this course, you will know how to:</p> <ol style="list-style-type: none"> <li>1. identify oceanographic structures of interest and choose the appropriate instruments to study them;</li> <li>2. write an application for an oceanographic cruise that meets the theoretical (definition of objectives according to a scientific question) and practical (description of a feasible sampling plan) requirements for peer review;</li> <li>3. use international databases to collect contextual data;</li> <li>4. implement the use of modern oceanographic instruments on board a ship;</li> <li>5. store, process and archive data and samples;</li> <li>6. carry out conventional laboratory analyses on the samples collected.</li> </ol>	
<b>PREREQUISITES</b>	
<p>General knowledge of oceanography (physical, biogeochemical and biological), mostly offshore. <i>To fully understand the consequences of the choices made during the preparation of a campaign, it is advisable to also choose the following UE (MEDO – MU5MRM32)</i></p>	
<b>BIBLIOGRAPHY / WEBOGRAPHY</b>	
N/A	

## HOW THE CLASS WORKS

The class is, roughly, divided into three blocks.

### *Week 1: Acquisition of knowledge*

Courses on the oceanography of the area of interest (the Mediterranean and the Ligurian Sea in particular) to give you the basic knowledge to plan a campaign effectively.

Courses and visit of the laboratory to discover the measuring instruments in oceanography (CTD, ADCP, imagery, floats, gliders, etc.).

Courses and practical applications to know how to find and use international oceanographic databases.

### *Week 2: Writing an oceanographic campaign plan*

Distribution of topics for scientific campaigns, from the small scale (e.g. Monitoring the consequences in the ocean of effluents from the Nice wastewater treatment plant) to the large scale (e.g. Biogeochemical contrasts in the Mediterranean), associated with a budget.

Reminder of the technical characteristics of ships and oceanographic instruments.

Work in pairs on a subject to write an oceanographic campaign application, following a template similar to that of the CNFC, including a budgeting of operations. The objective is that you mainly think about the scientific question and how to answer it, but taking into account realistic constraints (time, budget, weather) to force you to make choices and justify them in relation to your scientific question.

### *Week 3: Campaign at sea and sample processing*

Realization of a campaign on the Tethys II (~28 m) and the local ship (~12m), to cover approaches from pelagic oceanography to more coastal oceanography.

Modification of the campaign plan submitted, based on this experience at sea.

Storage of biological samples, recording of metadata, chemical assays on samples (nutrients, chlorophyll), digital data processing, evaluation of the percentage of achievement of campaign objectives.