# MASTER STUDIES IN MARINE BIOLOGY AND BIORESOURCES AT SORBONNE UNIVERSITE

## **MASTER BIP - MARINE BIOLOGY AND BIORESOURCES**

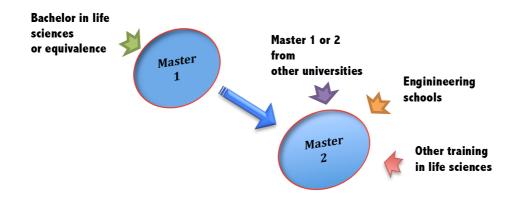
The Master BIP - Marine Biology and Bioresources program trains students in all fields of Marine biology (except ecology). Objects and purposed are related to marine organisms and environment through research approaches in biology and life engineering.

The targeted fields of activity are as follows:

- · Cellular and Molecular biology
- Development
- Integrated systems physiology
- Ecophysiology
- · Comparative biology
- Neurobiology

- · Genomics, Proteomics
- Applied systems
- Biotechnologies
- Evolution of development
- Microbiology

The program extends over 2 years but can be integrated directly in the 2nd year depending on previous experience.



Our training in the multi-disciplinary field of marine biology is based on:

- Teaching modules delivered by recognised specialists in marine biology.
- · French and international research teams, which routinely contribute to our program.
- Close collaboration, for teaching and research training, with Sorbonne Université centres of excellence: Institute of Biology Paris Seine, Roscoff Biological Station (Brittany), Oceanological Observatory in Villefranche-sur-Mer (Nice), Arago Laboratory Oceanological Observatory in Banyuls-sur-Mer (Perpignan).
- One International training program in partnership with Pontifical Catholic University of Santiago-Chile.
- Ten months of internship in internationally recognised laboratories in France or abroad.



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Marine Biology is fundamentally interdisciplinary, and our program is aimed at students from many different backgrounds – life sciences, engineering, and computer sciences – who want to pursue a career in marine biology in the public or private sector.

## **COURSE ORGANIZATION**

The **first-year program (M1)** provides fundamental knowledge necessary to develop scientific rigor, introduces marine biology and allows a first immersion in marine biological station.

## M1 S1 COMMON TRACK 30 ECTS

## Fundamental coursework (18 ECTS)

- ✓ Molecular mechanisms of cell signaling (6 ECTS)
- ✓ Research models in Physiology (3 ECTS)
- ✓ Biostatistics (3 ECTS)
- ✓ English for biologists (3 ECTS)
- ✓ Professional orientation (3 ECTS)

## Practical Unit (6 ECTS)

✓ Workshop « Contributions of genomics for the study of marine organisms » at Roscoff Biological Station (Brittany)

## Elective subject (6 ECTS)

## Choice of 1 from:

- ✓ Biomedical and Biotechnological innovation from marine models
- ✓ Philosophy of biology
- ✓ Introduction to cellular and genetic biotherapy

## M1 S2 ORIENTATION + LAB INTERNSHIP 30 ECTS

## Compulsory coursework (12 ECTS)

- ✓ Marine organisms and biological models
  - Villefranche-sur-Mer (6 ECTS)
- ✓ Marine Genomic Project
  - Roscoff (6 ECTS)

## Elective subject (6 ECTS)

- ✓ Schmid Training Course
  - Roscoff or Naples (6 ECTS)
- Methodological workshops in Ecophysiology
- Banyuls-sur-Mer (2 choices) (6 ECTS)

## Internship (12 ECTS)

✓ 2-4 months research internship in France or abroad



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The **second-year program (M2)** is designed to provide a unique opportunity for each student to acquire in-depth theoretical and practical knowledge in his/her field of interest and to work in marine laboratories.

## M2 S1 COMMON TRACK 30 ECTS

## Specialist units (18 ECTS)

- ✓ Marine models in development and evolutionary biology
  - Banyuls-sur-Mer (6 ECTS)
- ✓ Biotechnology of macromolecules of marine organisms
  - Roscoff (6 ECTS)
- √ Marine macroalgae biotechnology
  - Roscoff (6 ECTS)

## Elective subject (12 ECTS)

## Choice of 2 from:

- √ Biorythm Banyuls-sur-Mer (6 ECTS)
- √ Biofilm Lorient (6 ECTS)
- Adaptation of respiration and osmoregulation in marine environment - Roscoff (6 ECTS)
- ✓ Biotests and bioresources in marine environment
  - Banyuls-sur-Mer (6 ECTS)
- $\checkmark$  Translational regulation in eukaryotes
  - Roscoff (6 ECTS)
- ✓ Create your Start-up
  - Lorient (6 ECTS)

## M2 S2 MASTER'S PROJECT AND THESIS 30 ECTS

5-6 months research internship in France or abroad. This internship is usually in a research laboratory or can be in industry.



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## **RESEARCH TRAINING:**

An important component of the training at the Master's level is in research.

## **MASTER'S THESIS (30 ECTS)**

- 5 to 6 months internship performed in an internationally recognized research laboratory in France or abroad (financial support is available from the Master and/or the University to assist student mobility).
- The M2 research project is a professional experience that allows students to acquire scientific and technical expertise in their speciality as well as general skills (ability to carry out a project, to research and analyse information, to work in a team, to display creativity and critical thinking, to present information in a written and/or oral form) which are also valuable in non-research contexts.
- A list of projects proposed by French and foreign laboratories participating in our training program is available on our website, but students can also apply to other research teams that work in their field of interest.
- At the end of the internship a written dissertation and oral presentation is evaluated by a jury at the end of June.

## INTERNATIONAL TRAINING PROGRAM

 The Master BIP-Biology and Marine Bioresources has developed close collaborations with prestigious foreign partners (Pontifical Catholic University of Santiago-Chile, University of Salento-Lecce-Italy, Biozentrum-Basel University-Switzerland, University of Freiburg-Germany) to construct an international program and an international course in Marine Biology: - Schmid Training course "Established and Emerging Models for Marine Sciences".

## **CONTACTS:**

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