SCIENCE, TECHNOLOGY, HEALTH

M2 Molecular Biology and Environmental Microbiology

Master Chemistry and Life sciences

ECTS
60 credits

Duration
1 year

Component
Collège Sciences et Technologies pour l'Energie et l'Environnement (STEE)

Language(s)
English

Presentation

Increasingly strong societal demand in the fields of the Environment, sustainable development, and health now call for a synergy of cutting-edge skills involving Chemical and Biological Sciences.

Apply here from October to March

Check our FAQ HERE

The Master's degree in **Molecular biology and Environmental Microbiology** trains specialists with a mastery of modern **molecular** biology and **environmental microbiology**, with a solid background in **chemistry**, capable of grasping environmental issues related to:

- The protection of **ecosystems**,
- The ecotoxicology of soils, sediments, and water,
- The identification of microorganisms representing a risk to the environment or public health,
- The bio-rehabilitation of sites affected by anthropogenic (industrial and agricultural) pollution.

The **Molecular Biology and Environmental Microbiology** Master's degree is at the heart of this technological and socioeconomic evolution. At a meeting point between the professional world and the University in a region that is home to large-scale facilities of several industrial companies concerned by bio-decontamination(Total, Arkema, chemical industries at the Lacq site) and strong agricultural activity.

Biological methods developed for the remediation of contaminated sites, the treatment of effluents, the control of the use of phytosanitary products, or the search for pathogens in natural waters and cooling or water distribution systems are increasingly in demand and proposed as necessary alternatives for sustainable improvement of environmental problems.

The implementation of these methods as well as the development of molecular analysis tools and techniques (quantitative PCR, DNA chips, high-throughput sequencing, bioinformatics analysis, microbial biosensors, GMOs, and protein engineering) is one of the challenges for industrial and environmental policies in the coming years.

An orientation toward research may be envisaged, depending on the choice of options and especially internships.

Objectives

Taught in English, the first semester is devoted to theoretical and practical teaching by teacher-researchers,

supplemented by conferences in which professionals from the sector share their experience in the field, as well as visits to companies. The course is mainly taught through project-based scenarios.

The second semester consists of an internship of 4 to 6 months in a company, a professional organization, or an academic research laboratory.

Your university

Skills

At the end of this course, graduates will develop the following skills according to their choice of optional courses:

Identify the concepts and approaches of modern microbiology and biology,
- Understand the complexity and importance of microbial processes in the environment,
- Master modern biochemical, molecular, and genetic methodologies, as well as mathematical, statistical, and computer bioinformatic tools,
- Search for pathogens in natural environments and industrial installations or select micro-organisms likely to degrade contaminants of biotic or abiotic origin in the laboratory or in the natural environment,
- Conduct experiments to evaluate the effectiveness of biological or chemical methods of environmental remediation,
- Conduct studies and formulate opinions to solve practical problems posed by the protection of ecosystems: assessing the benefit-risk of the methods used, setting up field study protocols,
- Conduct field experiments to evaluate the effectiveness of chemical or biological methods for the protection of eco- and agrosystems.

Additional information

Key assets

- **Open to a Work and Study Program.**
- **Dual degree with a "Master in Biotechnology of Environment and Health" from the University of Oviedo (Spain).**

Scholarships

- EIFFEL Scholarship of Excellence
- Talents' Academy Grants
- Catalogue des Bourses Campus France

The International Master Programs Admission Office

master.programs@univ-pau.fr

Organisation

Organization

SEMESTER 1 from	
Mandat	
Field	**C**
Language	• English or F Language
Data analysis	• Statistical to
Molecular biology and environmental microbiology	• Molecular B applications (EC • Microbial bio and environmen conferences (EC • Microbial bio environmental a (EC2) (4.0 crédi
	Electives: choose

Quality	• Quality assurance for analysis	2
Environmental Chemistry	• Trace element biogeochemical cycles • Speciation concepts and analysis • Biological Macromolecules Characterization • Imaging techniques for environmental samples and materials characterization	2 2 2 2
Ecology	Molecular Ecology (2.0 credits ECTS)	2
Biotechnology	Trends and challenges in microbiology	2
Water	Water treatment: Lab work on Biological water treatments (2.0 credits ECTS)	2
Health	HSE	2
Group project	Environmental engineering project	4

Internship	• Internship	
Bibliography	• Bibliographic research	

Assessment method

- Final exams

Admission

Admission requirements

Academic requirements

Applicants must hold at least a 4-year university level in chemistry and/or biology fields.

The M2 MBEM is open to students who have completed an M1 (4-year degree) in "Molecular Biology and microbiology for the environment" (BME) or an equivalent level.

For students outside the UPPA, integration in the second year (M2) is subject to the selection of curricula with equivalent training levels and sufficient skills in biology, chemistry, and environment (Molecular biology, bioinformatics, microbiology, environmental microbiology, ecotoxicology, biostatistics, field sampling, and data processing, physical-chemistry, analytical chemistry, environment).

NB: Taught in French

English Language Requirements

Applicants must be fluent in English, both in writing and speaking. An applicant whose native language is not English has to take a recognized international English test.

Minimum required score: CECRL **B2** level in English

French Language Requirements

None: French language courses are included in the formation.

For any additional information or questions related to the application, please contact: beatrice.lauga@univ-pau.fr

How to apply

Apply here from October to March

Tuition Fees and partial exemptions

Go to the Tuition fee page

> ***The school partially exempts non-EU students from the differentiated fees for initial training enrolling in the Master's program.***

Student capacity

15

Prerequisites

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And after

Further studies

Sectors

- Environment
- Agribusiness
- Biotechnology
- Life sciences

Fields

- Research and Development
- Quality control

Positions

- Academic positions
- Researchers (public or private)
- Research and Innovation Engineers

Professional insertion

For more information about the outlooks after graduation, check the following document in French **Here**

Useful info

Contacts

Administration contact

secretariat sciences de la vie - Pau

secretariat-sciencesdelavie@univ-pau.fr

Partner laboratories

IPREM

https://iprem.univ-pau.fr/fr/index.html

Place

Pau

Campus

Pau