SCIENCE, TECHNOLOGY, HEALTH

M2 Chemical and microbiological characterization for environmental issues

Master Chemistry and Life sciences

ECTS
60 credits

Duration
1 year

Component
Université de Pau et des Pays de l'Adour (UPPA)

Language(s)
English

Presentation

Apply here from October to March

Strongly increasing societal demand in the fields of Environment, Sustainable Development, and Health, implies a synergy of advanced skills in Chemistry and Biology Sciences. To be able to effectively respond to this demand and to implement innovative solutions providing efficient answers to these requests, it is essential to perfectly understand the interaction of contaminants with living organisms and particularly their structures, properties, reactivities/activities in natural ecosystems.

The **"Chemical and Microbiological Characterization for Environmental Issues"** (CMCEI) second-year course of the Master in Chemistry and Life Sciences aims to train specialists with knowledge of the most recent advances in analytical chemistry, physics-chemistry, molecular biology, and environmental microbiology.

Objectives

Entirely taught in English, the first semester is devoted to the knowledge of contaminants cycles and to the application of different techniques for the analysis of chemical elements and species of interest in various compartments of the environment, the identification of microorganisms presenting a risk to the environment or public health, but also quality assurance, critical evaluation of scientific publications and /or technical documentation.

The second semester consists of an 18- to 24-week research placement in the field of chemical and/or biological analysis applied to the environment in IPREM teams.

The course is mainly taught through project-based scenarios which help students understand the scientific approach in research. It also makes them put into practice various techniques and reflect further on their professional project.

Your university

Skills

At the end of this program, the students in the «**Chemical and Microbiological Characterization for Environmental Issues Master**" will be able to:

* Show expertise in modern techniques in chemistry, molecular biology, and microbiology
* Synthesize technical and research documentation to produce a technical study

* Plan and define a research or R&D project in analytical chemistry, molecular biology, microbiology, or environmental survey
* Manage and carry out a project
* Manage field experiments to estimate the efficiency of chemical or biological methods for the protection of the ecosystems
* Interpret and validate results of chemical and biological analysis
* Produce a summary report describing the experiments done, the applied methods used, and the results obtained

Additional information

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 September to January		
Field	**Course**	**ECTS**
Language	English or French as a Foreign Language	2
Data analysis	Statistical tools project	4
Molecular biology and environmental microbiology	- Molecular Biology Technological applications (EC3) (6.0 crédits ECTS) - Microbial biotransformation and environmental applications - conferences (EC1) (2.0 crédits ECTS) -Microbial biotransformation and environmental applications - project (EC2) (4.0 crédits ECTS)	6 2 4
Quality	Quality assurance for analysis	2
Environmental Chemistry	- Trace element biogeochemical cycles - Speciation concepts and analysis	2 2 2 2

	- Biological Macromolecules Characterization - Imaging techniques for environmental samples and materials characterization	
Ecology	Molecular Ecology (2.0 crédits ECTS)	2
Analytical chemistry	- Analytical methods performances evaluation (2.0 crédits ECTS) - Advanced analytical chemistry : organic contaminants analysis (EC1) (2.0 crédits ECTS) - Advanced analytical chemistry : electrochemical sensors (EC2) (2.0 crédits ECTS) - Advanced analytical chemistry : Advanced spectrometric techniques coupling (EC3) (2.0 crédits ECTS) - Advanced analytical chemistry :Advar separation techniques (EC4) (2.0 crédits ECTS)	2
Research tools and applications	- Environmental engineering project - Scientific papers and documentation critical evaluation (2.0 crédits ECTS)	4 2

SEMESTER 2 From January to June		
Fields	**Course title**	**ECTS**
Internship	Internship	30

Trainings

Intership : Mandatory

Intership duration : 6 months

Admission

Admission requirements

Academic requirements

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

The **M2 CMCEI** is open to students who have completed an M1 (4-year degree) in **" Chemistry and Life sciences"** (SAVE), **"Molecular Biology and microbiology for the environment"** (BME), or an equivalent level.

For students outside the UPPA, integration in the second year is subjected to a 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).

Graduate Program Green - Environmental Analytical Chemistry and Microbiology

In 2022-2023, the UPPA is opening a 5-year integrated Master's/PhD program that provides research-intensive training in multiple fields, called the Graduate Program GREEN (GRaduate school for Energetic and Environmental iNnovation). Several courses of study taught entirely in English are part of this program. The Graduate Program GREEN is open to high-potential students from a variety of scientific backgrounds who have completed their undergraduate training with the highest honors. To be selected, candidates must explicitly indicate in their letters of motivation their desire to integrate the Graduate Program GREEN, providing reasons for why they wish to participate in this research-focused PhD-Track.

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:

florence.pannier@univ-pau.fr
or christine.cagnon@univ-pau.fr

How to apply

Apply here from October to March

Tuition Fees and partial exemptions

Administrative tuition in France is determined at a national level. The French Ministerial Order of April 19, 2019, amended on June 9, 2020, sets university tuition for a Master's Program as follows: European nationals: **€243,** extra-European nationals: **€3770.**

For the academic year 2022-2023, the Board of Directors has extended its policy of automatically providing a **partial reduction of these fees at the UPPA**. As a result, extra-European nationals will be granted automatic partial reductions such that **they will be able to pay the same enrollment fees as European nationals.**

Extra fees:

In addition to academic tuition, most students must pay a student body fee (CVEC, which cost €92 in 2020-2021).

NB: Admitted candidates in any course of study who have taken a break of more than two years from their studies will enroll via the UPPA's **Continuing Education service** *(Formation Continue / FORCO). They are exempt from the CVEC, however, they may be subject to a different tuition scale.*

And after

Professional insertion

Sectors

* Environment
* Agribusiness
* Analytical Chemistry
* Chemical industries
* Biotechnology

Fields

* Research and Development, quality control

Positions

* Academic positions
* Researchers (public institutes or private companies)
* Research and Innovation Engineers
* Ph.D. students

Useful info

Contacts

Head of Studies

Florence PANNIER

florence.pannier@univ-pau.fr

Head of Studies

Christine CAGNON

christine.cagnon@univ-pau.fr

Place

Pau

Campus

Pau

Know more

Collège STEE Sciences et Technologies pour l'Energie et l'Environnement

https://formation.univ-pau.fr/fr/colleges/college-stee.html