Master in Chemistry and Life Sciences

*Chemical and Microbiological Characterization for Environmental Issues*

Strongly increasing societal demand in the fields of Environment, Sustainable Development and Health, implies a synergy of advanced skills in Chemistry and Biology. In order to be able to effectively respond to this demand and to implement innovative solutions to provide satisfactory answers to these requests, it is essential to perfectly know the objects of study and particularly their structures, their properties, their reactivities / activities in natural systems. 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, physico-chemistry, molecular biology and environmental microbiology.

The research activities carried out within the IPREM (UMR CNRS-UPPA 5254, Institute of Analytical Sciences and Physical Chemistry for Environment and Materials) are a solid asset to implement this approach both on the Research and teaching. There exists a corpus of fundamental disciplines upon Analytical Chemistry, Physical Chemistry, Theoretical Chemistry, Polymer Chemistry and Physics and Microbiology. The training is also backed by the federation of Research on Aquatic environments and Resources (MIRA) which brings...
together varied and complementary skills on marine and freshwater aquatic environments on the theme of anthropic pressures and the sustainability of aquatic environments. These two groups, constituting two of the three strong axes of research at UPPA, are therefore able to offer the student a panel of knowledge that allows to train experts specializing in environmental protection with skills in both chemical and microbiological analysis, molecular biology, environment.

Entirely taught in English, the first semester is devoted to the knowledge of the cycles of the contaminants and to the application of different techniques for the analysis of the chemical elements and species of interest in the various compartments of the living and the environment, the identification of microorganisms presenting a risk for environment or public health, but also quality assurance, project management, critical evaluation of scientific publications and/or technical documentation. The second semester consists of 6 months research internship in the field of chemical and/or biological analysis applied to the environment in IPREM teams.

The course gives a large place to the learning by scenario projects, which enable the student to understand the scientific approach of the researcher as well as to put into practice various techniques and to deepen the reflection on his/her professional project.

The doctoral school of Exact Sciences and their Applications (ED211) of the UPPA further allows the students to naturally continue for a PhD preparation.