

# Fundamentals in Aquatic Ecotoxicology

## Synopsis

The latest knowledge on the fundamentals and new developments in aquatic ecotoxicology.

## Aims

To provide knowledge about mechanisms of action and toxic effects of the main families of organic and metallic pollutants and toxins and new approaches and tools used in aquatic ecotoxicology.

## Objectives

1. Fundamental basics in aquatic ecotoxicology
2. Predictive and retrospective ecotoxicology
3. Biomonitoring of aquatic pollutions
4. One health approach and sustainable development concepts

## Key Skills Acquired

At the end of this Unit, you should know and understand:

1. The basics of aquatic ecotoxicology
2. The deleterious effects of some main organic and metallic pollutants
3. The main methodological approach and tools (bioassays and biomarkers) used in ecotoxicology

## Syllabus Topics

covered include:

- Ecotoxicity of metals
- Ecotoxicity of organic pollutants. Main focus on PAHs, pesticides and microplastics
- Experimental Aquatic Ecotoxicology and methods
- Main analytical techniques in molecular biology used in ecotoxicology
- Mode of action and effects of endocrine disrupters
- Mode of action and effects of genotoxics
- Biological clock and effects of light pollution on biological rhythms

## Learning & Teaching

- Lectures: 18.5 hr
- Practical study: 15 hr
- Cases study: 3 hr

## Teaching Staff

- Jérôme Cachot (Coord.)
- Magalie Baudrimont
- Blandine Davail
- Patrice Gonzalez
- Bénédicte Morin
- Laura Payton
- Cassandre Aimon
- Laure Bellec

**Semester:** 1

**Timetable slot:** TBD

**ECTS:** 6

**Level:** compulsory

## Bibliography

- Aquatic ecotoxicology: fundamental concepts and methodologies, 1989. Ed. Alain Boudou, Francis Ribeyre. CRC press
- An Introduction to Aquatic Toxicology. Mikko Nikinmaa. 2014. Elsevier Science Publishing Co Inc, Academic Press Inc.
- Aquatic Ecotoxicology. Advancing Tools for Dealing with Emerging Risks, 2015. 1<sup>st</sup> edition. Edited by Claude Amiard-Triquet, Jean-Claude Amiard and Catherine Mouneyrac. Elsevier.

## Assessment

- Written theory examination (50%)
- Laboratory work and report (25%)
- Oral presentations of case studies (25%)

## Course Evaluation

By completion of University Unit Evaluation Questionnaire by students, annual assessment by Unit coordinator.