



Faculté des Sciences
& Techniques

LE MASQUERADE

MASTER

(Toxicology and Ecotoxicology)



How does the MASTER program work?

The **Human & Environmental Toxicology (THE)** master's degree trains toxicologists and ecotoxicologists, capable of understanding problems linked to environmental contaminants and their deleterious effects on living organisms and/or human health. During their training, students acquire a multidisciplinary vision of the effects of toxic substances at different scales (ecosystem, organism, cell, molecular target). Teaching is supported by the participation of some thirty academic laboratories (Universities, INRAE, CNRS, etc.), university hospitals and private companies. The program is rounded out by cross-disciplinary teaching (law, English, project management, communication techniques, risk analysis, geographic information systems, animal experimentation).

Training objectives

The Master's program focuses on the acquisition of complementary general toxicology and ecotoxicology.

Graduates will be able to manage projects involving prognosis (modeling and definition of biomarkers relating to intoxication), diagnosis (inventory of a single or multiple contamination) and/or decision support (solutions implemented to achieve remediation/detoxification). In basic research, students will work on scientific questions concerning the interaction between a contaminant/toxicant and its environment, or on human health.

On completion of the Master's program, graduates will be able to pursue a thesis and/or apply for jobs as engineers / project managers in the following structures:

- Public research: Universities, public scientific and technological establishments (CNRS, INRAE, INSERM, IRD, IRSTEA).
- Research & Development in the private sector (pharmaceutical, agrochemical, food, toxicological, ecotoxicological industries, etc.).
- Scientific expertise within national and European agencies and institutes or public industrial and commercial establishments (ANSES, INERIS, ADEME, IRSN, etc.).
- Environmental diagnosis (project manager in a design office).
- Project leader and project manager in regulatory toxicology (cosmetics, agri-food, nutrition, chemistry, agro-chemistry, consumer goods).

The Master THE aims to develop close links with companies, right up to R&D partnerships. Several companies are involved in our training program: Cap compétences, EUDRAC France, Knoell consulting, Syntech Research, Staphyt Regulatory, Test api, Toxiplan.

Training organization

MASTER 1

SEMESTER 1

- General ecotoxicology 27h 3ECTS
- General toxicology 31h 3ECTS
- Molecular Genetics 50h 6ECTS
- Cellular signaling and pharmacology 34h 4ECTS
- Spectroscopic techniques for pollutant analysis 25h 3ECTS
- Bioinformatics analysis 27h 3ECTS
- Biostatistics 26h 3ECTS
- English 20h 2ECTS
- Immune responses and toxi-infection 24h 3ECTS

SEMESTER 2

- In-depth ecotoxicology 24h 3ECTS
- In-depth toxicology 28h 3ECTS
- Physiological adaptations to environmental variations 24h 3ECTS
- Chemical techniques for pollutant analysis 26h 3ECTS
- Pre-Professionalization (PPE) 10h 1ECTS
- English 20h 2ECTS
- Internship/TER 6ECTS
- Geographic Information System (GIS) 20h 2ECTS

Choice of options (1 of 2)

- Population genetics in ecotoxicology 32h 3ECTS
- Risk analysis and regulatory toxicology 28h 3ECTS *Elective*

options (2 of 3)

- Oncogenesis-Cell proliferation control 20h 2ECTS
- Environmental remediation 20h 2ECTS
- Toxicology of additions 28h 2ECTS

MASTER 2

SEMESTER 3

- Terrestrial ecotoxicology 32h 4ECTS
- Toxicovigilance and Risk Analysis 35h 4ECTS
- Study project 30h 6ECTS
- Professional Integration Project (PIP) 12h 1ECTS
- English 20h 2ECTS
- Project management 20h 2ECTS
- Environmental law 20h 2ECTS

Options 1 of 2

- Aquatic ecotoxicology 42h 5ECTS
- Human and animal toxicology 46h 5ECTS

Options 2 of 4

- Regulatory toxicology 16h 2ECTS
- Animal experimentation (level 2) 30h 2ECTS
- Cytotoxicity and Chemotherapy 18h 2ECTS
- Natural active substances 24h 2ECTS

SEMESTER 4

- Practical training (5-6 months) or sandwich course 30ECTS

Registration fee :

As an indication, the Master's registration fee for the 2023-2024 academic year is€, payable after payment of the CVEC (cvec.etudiant.gouv.fr).

Scholarship holders are exempt from paying the CVEC and registration fees. Students who have received a conditional grant are automatically detected on the site, and can download their CVEC payment certificate at the end of the process.

Note: to apply for scholarships and accommodation (DES) for the start of the new school year, go to the CROUS website in mid-January:



The information contained in this document is given for guidance only and may be subject to change. It should not be considered as contractual.

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