

Professional Master's Degree – Specialty: Biotechnology and Sustainable Development

Program overview

University education must address both global and national concerns. Sustainable development offers a solution to the challenge of preserving a habitable planet for future generations through the **rational exploitation of natural resources**.

This **Master's program** is open to graduates from various **L3 (Bachelor's) programs**, fostering a dynamic and multidisciplinary scientific environment among students. However, **fundamental courses in microbiology, biochemistry, and genetics** will be reinforced, particularly in their practical applications.

The program aims to **develop students' abilities to identify, collect, and utilize natural resources** (plants, microorganisms) for **industrial and environmental applications**. To achieve this, students will deepen their **knowledge in plant sciences, microbiology, biochemistry, and molecular biology**, acquired during their L3 studies. These skills will help **address contemporary challenges** by promoting the **sustainable management of natural resources** (plants and microorganisms) and providing industries with **eco-friendly processing solutions**.

Additional courses will be offered to apply these theoretical concepts in real-world settings, including:

- **Bioprocesses**
- **Utilization of plant microbiomes**
- **Rehabilitation of anthropized areas**
- **Agroecology and entrepreneurship**

These applications span multiple sectors:

- **Environmental:** Agroecology, rehabilitation of degraded areas, biodiversity conservation
- **Industrial:** Agri-food, medicinal applications, and cosmetology

Finally, this program also emphasizes the **valorization of by-products** and the **management of municipal, rural, and industrial waste**, following the principle: **"Nothing is created, nothing is lost, everything is transformed."**

Curriculum highlights

Training Multidisciplinary Students for Careers in Research, Development, Production, Consulting, and Expertise

This program prepares students for **direct integration** into various fields related to the **industrial use of living organisms**, introducing **bioprocess concepts** to industries through the use of **plants, microorganisms, and their products** for a **more sustainable and less polluting environmental impact**.

Career Opportunities

Industrial Sectors

- Human and animal food industries
- Cosmetology, parapharmaceutical, and medicinal industries
- Textile industries
- Detergent industries
- Pulp and paper industries
- Recycling industries
- Biofuel and bioplastic industries
- Chemical industries

Environmental and Ecological Fields

- Ecosystem management and conservation
- Agroecology
- Rehabilitation of degraded sites and pollution control
- Biodiversity conservation and the creation of microbial and seed banks, as well as seed industries
- Urban and agricultural waste management and valorization

Entrepreneurship

- **Start-up creation** leveraging biological resources and biotechnology

This program equips students with the skills to **develop innovative, eco-friendly solutions**, integrating **biotechnology into key industries** while contributing to **sustainable development and environmental preservation**.

Admission information

- Bachelor's Degree in Biology and Plant Physiology
- Bachelor's Degree in Microbiology
- Bachelor's Degree in Molecular Biology
- Bachelor's Degree in Microbial Biotechnology
- Bachelor's Degree in Agroecology
- Bachelor's Degree in Plant Protection
- Bachelor's Degree in Biochemistry

Core courses Advanced

- Applied Microbiology
- Applied Biochemistry
- General Genetics
- Molecular Biology and Biodiversity Conservation
- Biotechnology Products and Processes

Advanced topics

- Waste Management and Treatment
- Fundamentals of Bioprocesses
- Bioremediation and Restoration

Fees Teaching

Free

Language

French/English