University of Oum El Bouaghi

Faculty of exact sciences and natural and life sciences

Department of nature and life sciences

Program name: Bachelor's degree in Plant Biotechnology

- **Level: Master**
- **Domain: Biology**
- **Field: Biotechnology**
- **Specialty: Plant Biotechnology**

1. **Program Description:**

The adaptation and evolution of living organisms are underpinned by changes in the structure of their genome in relation to environmental variations. The precise mechanisms that govern these modifications are now analyzed at the molecular level. Their understanding has changed our vision of genome organization and function. It has led to new applications in the fields of life management in agronomy, ecology, medicine, bioindustries...

This course is mainly aimed at students who wish to move towards the application of biotechnologies in plant sciences. It leads them to acquire an experimental approach using the new molecular tools in the fields of applications in fundamental and

applied research: Biodiversity analysis, improvement, phytogenetic resources, pharmacology...

The time devoted to theoretical knowledge will be equivalent to that devoted to experiments. These courses are designed to enable students to work in a public research organization or in higher education, as well as to integrate a research and development laboratory of an industry in biology.

It also takes into account the rapid evolution of concepts and techniques in today's world. It will seek to help them acquire both rigor in scientific reasoning and flexibility in the analysis of biological phenomena.

It is dedicated to the study of plant diversity at different levels: from genes to proteins, from cell structure to adaptation and evolution of species, in their fundamental aspects as well as in the perspectives of biotechnological applications that they allow to consider in the fields of biodiversity, plant genetic resources and agribusiness.

This training will enable the students to adapt to the rapidly evolving fields where major developments can be anticipated in the coming decades, such as genomics, post-genomics and bioinformatics.

2. Entry Requirements

The programme aims to provide candidates with advanced and in-depth knowledge and transferable skills in biotechnology to contribute to the development of processes, products, technologies and services. This programme would also enable candidates to pursue lifelong learning and adapt effectively, professionally and ethically in an increasingly challenging and continually changing global bioindustry environment. In addition, candidates should be able to work independently and systematically to comprehend a project, design and conduct research as well as analyse and communicate the outcomes effectively. Candidates should be able to demonstrate leadership qualities through effective collaboration with peers and stakeholders, thus contributing to the body of knowledge relevant to the current needs and future developments in the industry and research environment.

3. Program Units and modules

Semester 1

Fundamental Teaching Unit 1

Matter 1 Applied Biochemistry

Matter2 Plant Biotechnology

Fundamental Teaching Unit 2

Matter 1 Plant Genetics

Matter 2 Molecular biology

Methodology Teaching Unit

Matter 1 Bioinformatics

Matter 2 Strategies experiments in biology

Discovery Teaching Unit

Matter 1 Analysis bibliographic

Transversal Teaching Unit

Matter 1 Communication

Semester 2

Fundamental Teaching Unit 1

Matter 1 Biodiversity and plant improvement

Matter2 Biotechnology of the environment

Fundamental Teaching Unit 2

Matter 1Angiosperms to medicinal interest

Matter2 Molecules of interest pharmacological

Methodology Teaching Unit

Matter 1 Methods and Analysis Techniques

Matter 2 Hygiene and safety in laboratory

Discovery Teaching Unit

Matter 1 Article Analysis

Transversal Teaching Unit

Matter 1 Legislation

Semester 3

Fundamental Teaching Unit 1

Matter 1 Plant Breeding Methodology

Matter 2 Cell signaling and gene regulation

Fundamental Teaching Unit 2

Matter 1 Applied plant physiology and biochemistry

Matter 2 Techniques and applications of microbial fermentation

Methodology Teaching Unit

Matter 1 Industrial uses of crop production

Matter 2 Methodology of scientific research

Discovery Teaching Unit

Matter 1 Evaluation and management of genetic resources

Transversal Teaching Unit

4. Other

Examinations can take different forms, including reports of practical work, tutorials and oral presentations.

The tests of the knowledge acquired are by:

- Written tests of knowledge of all teaching units

- Reports of the results of practical work

- Tests of control of mastery of practical work

- Oral presentation of personal work

- End of study project that begins at the end of the third semester of the Master. He corresponds to an activity supervised by a teacher-researcher. Based on the subject assigned, the student must:

  * search scientific literature (books, articles and information online)

  * Analyze data acquired after experimental work

  * Write a synthetic written document

  * Prepare an oral defense on the subject before a jury