Studies identity sheet

Domain : Natural and Life Sciences

Branch : Biological Sciences

Speciality : Applied Microbiology

Cycle: Master

Type: Academic

Attachment structure: Faculty of Nature and Life Sciences

Department of Molecular and Cellular Biology

1. Context

The Applied Microbiology master's degree opens the way to further study in the field of research (Doctorate) or to immediate entry into the professional world in the fields of the environment, health, biotechnology, or even agri-food.

2. Conditions of access

Entry into the first year of the Master is accessible to students holding a License (LMD) in Microbiology.

3. Objectives

This specialty provides in-depth training in Applied Microbiology with applications in the pharmaceutical, health, cosmetics, chemical, food and environmental sectors. It offers a skilled workforce in trades that meet growing needs because they are at the heart of the major current challenges in these sectors. It also trains executives capable of designing, developing and managing the quality of innovative products, processes and services in these sectors. Particular attention is given to the acquisition of skills allowing professional integration in research and development. The training is offered, not only in initial training, but also in continuing and work-study training. The study program corresponds to the multiple aspects of applied microbiology offering the student an extensive and multidisciplinary training in research in applied microbiology. Alternatively, this program will prepare the student to continue their studies at the doctoral level after submitting a dissertation. The student will be responsible for a research project and will be supervised by one or more researchers experienced in different fields of microbiology.

Students with a master's degree in Applied Microbiology acquire the following general skills:

- ✓ Scientific and technical knowledge in applied microbiology
- ✓ Ability to analyze and synthesize
- ✓ Ability to build documentation
- ✓ Ability to execute a project and take initiatives
- ✓ Ability to work in a foreign language (English)
- ✓ Ability to work independently and in a team.

4. Profiles and skills targeted

- ✓ Have a thorough knowledge of biology in general and knowledge
- ✓ Specialized in certain disciplinary fields
- ✓ Master the basic techniques and equipment used in microbiology
- ✓ Know how to apply them in the different biological disciplines
- ✓ Know how to implement an experimental approach
- ✓ Know how to manage bibliographical resources (databases, online scientific journals) and master the scientific literature related to the biological field concerned
- ✓ Have a capacity for synthesis
- ✓ Know how to critically analyze scientific results

5. Regional and national employability potential

Train executives in the fields of research or research and development departments, in the public service as well as in private companies:

- ✓ Research Laboratory of Universities, Research Centers.
- ✓ Hospital-University Analysis Laboratories, Biological Analysis Laboratories.
- ✓ Pilot laboratories in Bio-industries.
- ✓ Pharmaceutical sector.
- ✓ Agri-food sector.
- ✓ Environment.

Preparation of a doctorate, which allows you to be recruited as a researcher, teacher-researcher, in the public service (universities, national institutes, research centers, etc.) or in positions of comparable level in private companies.

6. Gateways to other specialties

- ✓ Biotechnology
- ✓ Molecular biology
- ✓ Food Science
- ✓ Microbial ecology
- ✓ Toxico-pharmacology

7. Training Partners

- Partner universities:
  - ✓ Mentouri Constantine University
  - ✓ Badji Mokhtar Annaba University
  - ✓ University of Guelma
  - ✓ Tebessa University
  - ✓ C.H.U. Batna

- Companies and other socio-economic partners:
  - ✓ Health sector:

- The health direction at the wilaya of Khenchela: Public establishments (hospitals, clinics and analysis laboratories) (co-supervision, practical internships, research)

- Analysis laboratories and private clinics (co-supervision and practical internships)

  - ✓ Agronomic sector:

- Forests conservation of at the wilaya of Khenchela (field trips, practical training and co-supervision)

- The direction of agricultural services (D.A.S) at the wilaya of Khenchela (reception of student trainees, co-supervision, installation of trials at the level of pilot farms).

  - ✓ Environment sector :

- Public and private quality control laboratories (co-supervision, practical training)
- University Research Laboratories, Research Centers
- Pilot laboratories in Bio-industries
- Pharmaceutical sector
- Food industry
- Algerian direction of water (ADE) and Water treatment Station

8. Semester organization of lessons (one table per semester)

Semestre 1 :

Teaching units	Study hours per week				
	14-16 weeks	Courses	Tutorials	Practical courses	Other
Fundamental U					
UEF1(O/P)	**135h00**	**4h30**	**3h00**	**1h30**	**165h00**
Molecular and medical bacteriology	90h00	3h00	1h30	1h30	110h00
Molecular virology	45h00	1h30	1h30		55h00
UEF2(O/P)	**67h30**	**1h30**	**1h30**	**1h30**	**82h30**
Biodiversity of microorganisms	67h30	1h30	1h30	1h30	82h30
Methodology U					
UEM1(O/P)	**105h00**	**3h00**	**1h00**	**3h00**	**120h00**
Biochemical analysis techniques and molecular imaging	60h00	1h30	**1h00**	1h30	65h00
Bioinformatics and exploratory genomics	45h00	1h30		1h30	55h00
Transversal U					
UET1(O/P)	**22h30**	**1h30**			**2h30**
Communication	22h30	1h30			2h30
Discovery U					
UED1(O/P)	**45h00**	**1h30**	**1h30**		**5h00**
Scientific English	45h00	1h30	1h30		5h00

Semestre 2 :

Teaching units	Study hours per week				
	14-16 weeks	**Courses**	**Tutorials**	**Practical courses**	**Other**
Fundamental U					
UEF1(O/P)	**112h30**	**3h00**	**3h00**	**1h30**	**137h30**
Metabolic biochemistry of microorganisms	67h30	1h30	1h30	1h30	82h30
Biotechnology	45h00	1h30	1h30		55h00
UEF2(O/P)	**90h00**	**3h00**	**1h30**	**1h30**	**110h00**
Infectious microbiology and health	45h00	1h30		1h30	55h00
Microbial immunology	45h00	1h30	1h30		55h00
Methodology U					
UEM1(O/P)	**105h00**	**3h00**	**2h30**	**1h30**	**120h00**
Methodology in molecular and cellular biology	60h00	1h30	1h00	1h30	65h00
Cell communication and signaling	45h00	1h30	1h30		55h00
Transversal U					
UET1(O/P)	**22h30**	**1h30**			**2h30**
Legislation	22h30	1h30			2h30
Discovery U					
UED1(O/P)	**45h00**	**1h30**	**1h30**		**5h00**
Bioethics	45h00	1h30	1h30		5h00

Semestre 3 :

Teaching units	Study hours per week				
	14-16 weeks	**Courses**	**Tutorials**	**Practical courses**	**Other**
Fundamental U					
UEF1(O/P)	**135h00**	**3h00**	**3h00**	**3h00**	**165h00**
Applied Microbiology and Microbial Biodiversity Analysis	67h30	1h30	1h30	1h30	82h30
Microbial ecology	67h30	1h30	1h30	1h30	82h30
UEF2(O/P)	**67h30**	**1h30**	**1h30**	**1h30**	**82h30**
Microbial toxicity and food safety	67h30	1h30	1h30	1h30	82h30
Methodology U					
UEM1(O/P)	**105h00**	**3h00**	**2h30**	**1h30**	**120h00**
Microbiological quality control	60h00	1h30	1h00	1h30	65h00
Regulation of gene expression.	45h00	1h30	1h30		55h00
Transversal U					
UET1(O/P)	**22h30**	**1h30**			**2h30**
Entrepreneurship	22h30	1h30			2h30
Discovery U					
UED1(O/P)	**45h00**	**1h30**	**1h30**		**5h00**
Bibliographic research and scientific articles	45h00	1h30	1h30		5h00

Semester 4 :

Internship in a company sanctioned by a dissertation and a defence.

	VHS	**Coeff**	**Credits**
Personal work	**300**	**10**	**20**
Company internship	**75**	**5**	**10**
Seminars			
Other (explain, list,)			
Total Semester 4	**375**	**15**	**30**

9. Evaluation method

- 40% for Continuous Control (CC)

- 60% for the Exam

This method of assessment concerns all the teaching units of the first three semesters.