الـجـمـهــوريـــة الـجـزائـريـــة الديـمـقـراطـيـة الشـعـبـيـــة
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وزارة الـتـعـلـيــم الـعـــــالـــي والبـحـث الـعـلـمــــــــــــي
Ministère De L'enseignement Supérieur Et De La Recherche Scientifique

Université **A**bou **B**ekr**B**elkaid**T**lemcen
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Vice **R**ectorat de la **F**ormation **S**upérieure de **G**raduation, de la **F**ormation **C**ontinue et des **D**iplômes

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جامعــة أبـو بـكــر بلقــايـــد تـلمســـان
نيابــة مديريــة الجامعة
للتكوين العالي في التدرج والتكوين
المتواصل والشهادات

Branch: Biological Sciences

1-Identification of the Education Offer

Level:License

Field :Natural and Life Sciences

Branch :Biological Sciences

Speciality :Biochemistry

2-Educational Establishment :

Faculty/Institute:Aboubekr Belkaïd-Tlemcen University

Department:Biology

3-External partners

Algerian Academic partners:University of Ain Temouchent, Naama University Center

Companies and other socio-economic partners:Tlemcen University Hospital Center

International partners :

4-Context and objectives of the training:

Biochemistry License allows students to acquire practical and theoretical knowledge in the life sciences, with a focus on molecular and cellular approaches such as metabolic and structural biochemistry, molecular biology, cell biology, molecular structures, microbiology, and biotechnology.

Students who graduate with this degree will have gained in-depth knowledge in biochemistry and molecular biology. Additionally, this program is complemented by a transdisciplinary training that includes aspects such as computer science and didactics, providing better professional integration.
The courses offered in the various units of the Biochemistry degree program emphasize practical work (laboratory work and internships) and tutorials (seminars), which are organized to encourage personal, individual, and teamwork, as well as the development of autonomy and communication skills.

5-Facilities, Equipment and Laboratoires

Biochemistry License benefits from access to the facilities and resources of the research laboratory "Antibiotics, Antifungals: Physicochemistry, Synthesis, and Biological Activity," as well as several educational laboratories within the Faculty of Natural and Life Sciences/Science and Technology at the University.

6-Profiles and Competencies Targeted

A student who holds a Biochemistry Licensewill have acquired theoretical and practical knowledge in biochemistry and molecular biology. Furthermore, this program includes a transdisciplinary training (involving computer science, didactics, etc.) that will enhance professional integration.

In the various units, a significant portion of the instruction is conducted through practical work (laboratory work and tutorials), designed to foster independent and team-based work, as well as develop autonomy and communication skills.

7-DevelopmentProspects and Employability

Master's in Biological Sciences
Ministry of National Education
Public Health
Higher Education
Agriculture
Pharmaceutical Industry
Food Industry
Quality Control Laboratories
University Hospital Centers
Laboratories for Analysis and Suppression of Frauds
Veterinary Institutes
Fish and Seafood Breeding Stations
Biochemistry Research Laboratories and Centers

Water Treatment Stations

8-Organisation of the SemestersTeaching

Semester 5

UEF1: Cellular Biochemistry and Enzymology
M1: Cellular and Functional Biochemistry
M2: Advanced Enzymology
UEF2: Immunology and Metabolic Regulation
M1: Cellular and Molecular Immunology
M2: Metabolic Regulation
UEM: Preparative and Analytical Techniques in Biochemistry
UED: Bioinformatics
UET: Scientific English

Semester 6

UEF1: Molecular Biology and Genetic Engineering
M1: Molecular Biology
M2: Genetic Engineering
UEF2: Structure and Function of Macromolecules
UEM 1: Spectroscopic Techniques in Biochemistry
UEM 2: Cellular Dynamics and Differentiation
UED: Pharmacology/Toxicology
UET: Scientific English

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المتواصل والشهادات

1- Identification of the Education Offer

Level* :*Licence

Field :* *Natural and life sciences

Branch* : *Biology

Speciality* :*Microbiology

2- Educational Establishment :

***Faculty/Institute:*Faculty of Natural and Life Sciences, Earth and Universe Sciences**

Department*: *Biology

3- External partners

Algerian Academic partners:

***Companies and other socio-economic partners*:**teaching hospital of Tlemcen, Pasteur Institute of Algeria and GIPLAIT institution.

International partners :

4- Context and objectives of the training:

The Microbiology license is motivated by the importance of this matter and its multidisciplinary nature which encompasses many fields (fundamental, medical, environmental, industrial, agronomic, etc.).This training will thus cover the various

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fundamental and applied aspects of microbiology in order to enable the student to meet the needs of the various sectors of the national economy.

The main objectives of this training are the knowledge of all the microorganisms that surround us (bacteria, fungi, algae and viruses), the understanding and control of their activities when they are harmful (microbiological examination and biological fluids, antibiotic therapy, etc.), and the use and improvement of their properties when they are beneficial (Biocontrol, yeasts, yogurt, antibiotics, enzymes, bioremediation...).

5- Facilities, Equipment and Laboratoires

- Four Microbiology educational laboratories and one Microbiology research laboratory (LAMAABE)
- A warehouse for glassware and chemical products.
- Library of the Faculty of Life and Natural Sciences, Earth and Universe Sciences
- Central library of the university.
- SNDL database
- Wi-Fi connection available in the faculty area.

6- Profiles and Competencies Targeted

1-Understand the concepts and approaches of modern microbiology.

2- Master the systematics, metabolism and genomics of microorganisms.

3- Understand the role of microorganisms in their environment and their power to meet or control human needs.

4- Raising awareness of the industrial world, ethics and safety related to the use of life technologies.

7- Development Prospects and Employability

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- Masters studies
- Research Laboratory.
- Medical laboratory.
- Quality control laboratory.
- Education.
- Water treatment stations
- Food industry.
- Pharmaceutical industry.
- Medical microbiology (Hospital, public clinic andprivate clinic)
- Department of the environment.
- Department of trade.
- Scientific police.
- Customs.

8- Organisation of the Semesters Teaching

Modules taught in semester 5 : Systematics of prokaryotes, Mycology – Algology – Virology, Microbial biochemistry, Molecular biology and genetic engineering , Microbial genetics, Microbiological control techniques and Microbial enzymology

Modules taught in semester 6 : Industrial microbiology, Environmental Microbiology, Food microbiology, Bioinformatics, Biostatistics, Bibliographic search and technology monitoring and Experimental analysis techniques

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1-Identification of the Education Offer

***Level*: Licence**

Field : Natural and life sciences

***Branch* :Biology**

***Speciality* :Molecular biology**

2-Educational Establishment :

Faculty/Institute: Faculty of Natural and Life sciences, Earth and Universe sciences.

Department:Biology

3-External partners

Algerian Academic partners:

***Companies and other socio-economic partners*: hospital-university center**

International partners :

4-Context and objectives of the training:

The main objective of this license is to introduce students to specialization in molecular biology. It is the study of the structure, function and regulation of gene expression. Genes are sequences of deoxyribonucleic acid (DNA) organized in a linear fashion between long molecules which, in association with proteins, constitute the chromosomes. DNA remained until the early 1970s the most difficult cellular compound to analyze. This difficulty related to the length of DNA molecules and their monotonous chemical characteristics, was removed thanks to the development of various DNArecombinant techniques.Today, DNA molecules can be cut and ligated *in vitro*. The DNA fragments thus obtained are cloned. Once isolated, they can be sequenced and reintroduced

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into various cell types or even into animals, by additional transgenesis, in order to study their function.

This academic license will allow students to acquire methodological and fundamental expertise in different fields of biology: Microbiology, biochemistry, functional and structural genomics, proteomics, pharmacology, pharmacochemistry and biotechnology.

5-Facilities, Equipment and Laboratoires

- Two molecular biology and genetics laboratories in the faculty
- A warehouse for glassware and chemical products.
- Library of the Faculty of Life and Natural Sciences, Earth and Universe Sciences
- Central library of the university.
- SNDL database
- Wi-Fi connection available in the faculty area.

6-Profiles and CompetenciesTargeted

The priority objective of this License is to provide training allowing the rapid integration of graduates into working life at Bac+3 level. It is also a gateway for specialized Master's training which shares in common the study of the living , ranging from bacteria to plants, animals, as well as humans, through the study and use of cells cultured in vitro.

In Algeria, molecular biology remains sporadic, this science should be popularized to enable new challenges to be met while mastering a new technique.

This training is both the wish of the students and that of the teachers of the biology department who share the same passion which is that of research at the molecular level.

7-DevelopmentProspects and Employability

- Masters studies
- Secondary education
- Pharmaceutical industry

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- Hospital-university or research laboratories
- Medical laboratories
- Fraud repression
- Food industry
- Direction of water treatment
- Water treatment /desalination stations
- Plants or fish and seafood farms .

8-Organisation of the SemestersTeaching

✓ Semester 5:

Foundations of Molecular Biology
Elements of molecular genetics of microorganisms
Metabolic biochemistry
Methodological analysis techniques
Enzymology
Internal organization of the cell
Scientific English

✓ Semester 6:

Genetic engineering
Signaling and regulation of gene activity
Biomembranes
Biotechnology
Biostatistics
Molecular and Cellular Immunology
Endocrinienne Regulation
Communication technology

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1- Identification of the Education Offer

Level* :*License

Field :* *Natural and life sciences

Branch* : *Biology

Speciality*: *Genetics

2- Educational Establishment :

Faculty/Institute:Faculty of Natural and Life Sciences, Earth and Universe Sciences

Department: Biology

3- External partners

Algerian Academic partners:

- The University of Science and Technology of Oran Mohamed Boudiaf USTOMB.
- INRA d'Alger

***Companies and other socio-economic partners*:**

- teaching hospital of Tlemcen, Pasteur Institute of Algeria
- ITELV (Institut technique d'élevage)
- DSA (Direction de la santé animale)
- HCDS (Haut-commissariat de la mise en défend de la steppe)
- ITDAS (Institut technique du développement de l'agriculture saharienne)
- CNIAG (centre national d'insémination et d'amélioration génétique)
- ONIL (Office national interprofessionnel du lait et des produits laitiers).

International partners :

- INRA Jouy-en-Josas, Paris,
- Université de limoge.

4- Context and objectives of the training:

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The bachelor's degree in genetics is an academic with a multidisciplinary approach to the life sciences. The program includes training in human genetics, genetics of micro-organisms, evolutionary genetics, population genetics, applied molecular biology, genetic engineering, bioinformatics and biostatistics, etc.

5- Facilities, Equipment and Laboratoires

- Pedagogical genetics laboratory and Laboratory Genetic applied in agriculture, ecology and public health (GenApAgiE).
- Library of the Faculty of Life and Natural Sciences, Earth and Universe Sciences
- Central library of the university.
- SNDL database
- Wi-Fi connection available in the faculty area.

6- Profiles and CompetenciesTargeted

1-Introduction to the development of strategies for genotypic analysis using different approaches,

2- Initiation to the development of study strategies at DNA level in relation to a given problem.

3- Acquisition and mastery of various commonly used genetic and molecular biology methods (DNA extraction, PCR-RFLP, PCR-DGGE and PCR-SSCP).

4- Acquisition and mastery of various population genetics software packages;

5- Initiation to scientific research, and to develop topics with socio-economic impact

7- Development Prospects and Employability

- Ministry of Agriculture, Rural Development and Fisheries.
- consultancies: experts in biodiversity management,
- Instituts Techniques De L'élevages (ITELV),
- National Center for Artificial Insemination and Genetic Improvement(CNIAAG),
- Agrifood industries.

- Tlemcen National Park
- Ministry of Higher Education
- The university hospital.
- Masters studies
- Research Laboratory.

- Medical laboratory.
- Education ministry.
- Pharmaceutical industry.
- Medical Genetics (Hospital, public clinic andprivate clinic)
- Department of the environment.
- Scientific police.

8- Organisation of the Semesters Teaching

Modules taught in semester 5 : Prokaryotic Genetics, Eukaryotic Genetics , Molecular Biology and Genetic Engineering, Genotoxicology, Biometrics, instrumental analysis techniques, Ecology and nature conservation, University work methodology.

Modules taught in semester 6 : Quantitative Genetics of populations, Evolutionary genetics, physiology of the main functions, Bioinformatics, Immunogenetics, In-vitro culture,, Introduction to project learning, Scientific English.

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1- Identification of the Education Offer

Level: License

Considering the License as equivalent to a Bachelor's degree would be inaccurate, although are both three-year post-baccalaureate courses. This distinction arises because Bachelor's degrees are typically awarded by private educational institutions, while the License is delivered at the university.

Field: Life Sciences

Branch: Biological Sciences

Speciality: Immunology

2- Educational Establishment :

Faculty/Institute: Faculty of Nature and Life Sciences, and Earth and Universe Sciences, University of Tlemcen, Algeria

Department: Biology

3- External partners

a. Algerian Academic partners: USTHB (Prof. Chafia Touil-Boukoffa's Team)

***b. Companies and other socio-economic partners*:** Constantine Biotechnology Center, Tlemcen Medical University Center

c. International partners:

1. University of Harvad, Boston, USA
2. University of Birmingham, Alabama, USA
3. University of Fribourg, Germany
4. University of Montpellier, France
5. Centre d'Immunologie de Marseille, France
6. Luminy, Université d'Aix Marseille, France
7. Université d'Evry-Val d'Essonne, France

8. Université Paris-Sud 11, Orsay
9. Université de Perpigna Via Domitia, France
10. Université de Valence, Espagne,
11. Université de Catane, Italie
12. Guangdong Provincial People's Hospital（Guangdong Academy of Medical Sciences), Southern Medical University, China

4- Context and objectives of the training:

The training program in Immunology under the branch of Biological Sciences at the Nature and Life and Earth and Universe Sciences of Tlemcen University (Algeria) aims to provide a comprehensive education in the field of Immunology at the License level. The program is designed to equip students with theoretical knowledge, practical skills, and research abilities in Immunology.

The objectives of the training are as follows:

i. To provide students with a solid foundation in the principles and concepts of Immunology.
ii. To develop students' understanding of the immune system, its components, and its functions.
iii. To enable students to apply their knowledge of Immunology to solve problems and address challenges in the field.
iv. To train students in laboratory techniques and methodologies commonly used in research and clinical immunology.
v. To foster critical thinking, analytical skills, and scientific reasoning among students.
vi. To promote interdisciplinary collaboration and integration of knowledge from other related fields.
vii. To encourage students to stay updated with the latest advancements and discoveries in Immunology.
viii. To prepare students for further studies or employment in academia, research institutions, or the industry related to Immunology.

5- Facilities, Equipment and Laboratoires

i. The training program in Immunology benefits from the following facilities, equipment, and laboratories:

ii. Classroom: The Natural and Life and Earth and Universe Sciences Faculty offers a classroom equipped with a projector.

iii. The Immunology training program is supported by a spacious Research Laboratory (W0414100, Laboratory of Applied Molecular Biology & Immunology) that houses advanced research amenities. It provides students with the opportunity to carry out experiments and acquire hands-on experience in diverse immunological methods. The laboratory is fully equipped with essential instruments, equipment, and reagents.

iv. The library at the faculty provides an extensive collection of books, scientific journals, and online resources pertaining to immunology and various other life sciences. Students have the opportunity to utilize these resources for their coursework, research endeavors, and personal study. Additionally, the Training Manager, Prof. Mourad Aribi, generously provides the Training Team and Students with a Virtual Library that contains reference books, along with his personal collection of books and internationally published works in immunology, all at no cost.

v. The Faculty of Nature and Life and Earth and Universe Sciences offers four computer laboratory rooms equipped with internet connectivity and essential software, specifically designed for computer science, biostatistics, and bioinformatics/immunoinformatics.

vi. In adherence to ethical guidelines and regulations, the faculty aims to establish a spacious animal facility for conducting research in immunology using animal models, as well as for various other biological disciplines. Currently, animal experiments are being conducted at the University of Tlemcen's 30Lab Complex.

vii. Collaborative spaces: The Faculty of Nature and Life and Earth and Universe Sciences fosters teamwork and engagement among students and Faculty members through the provision of a spacious open area adjacent to the Library and Amphitheaters. This dedicated space, along with meeting rooms, encourages group discussions, project meetings, and academic interactions.

The availability of these facilities, equipment, and laboratories ensures a conducive learning environment for students pursuing the License program in Immunology.

6- Profiles and Competencies Targeted

The training program targets students who have completed their two academic years (L2 in Biological Sciences) and have a keen interest in Immunology. The desired profiles and competencies include:

i. Strong foundation in basic sciences such as Molecular Biology, Biochemistry, and Microbiology.
ii. Passion for understanding the immune system and its interactions.
iii. Analytical and critical thinking skills.
iv. Aptitude for laboratory work and scientific experimentation.
v. Good communication and presentation skills.
vi. Ability to work independently as well as in a team.
vii. Strong work ethic and dedication to research.
viii. Willingness to stay updated with the latest research and scientific literature.

7- Development Prospects and Employability

i. Upon completion of the License program in Immunology, graduates will have various development prospects and employment opportunities. These may include:
ii. **Pursuing higher education**: Graduates can opt for postgraduate studies such as a Master's degree or Ph.D. in Immunology or related disciplines. This can open doors to advanced research opportunities and academic careers.
iii. **Research positions**: Graduates can seek employment in research institutions, both within Algeria and internationally, where they can contribute to ongoing research projects in Immunology or related areas.
iv. **Biotechnology and pharmaceutical industries**: The knowledge and skills gained in Immunology can make graduates suitable for positions in biotechnology and pharmaceutical companies involved in developing and manufacturing immunological products and therapies.
v. **Healthcare sector**: Graduates can work in healthcare settings, such as hospitals, clinics, or diagnostic laboratories, where their understanding of Immunology can be utilized in areas like diagnostics, disease management, and patient care.
vi. **Academic careers**: Graduates with a strong academic record and research experience may choose to pursue teaching positions in educational institutions, imparting their knowledge of Immunology to future generations.

vii. **Entrepreneurship**: Some graduates may have the vision and entrepreneurial spirit to establish their own biotech startups or consulting firms focused on Immunology or related fields.

8- Organisation of the Semesters Teaching

The teaching organization for the License program in Immunology follows a semester-based system. The academic year is divided into two semesters. The organization of teaching includes:

i. **Coursework**: Students attend lectures, workshops, seminars, and hands-on and tutorial sessions covering various aspects of Immunology, including immunological principles, immune system components, immunopathology, immunogenetics, immunotherapy, and more. The coursework are delivered by experienced faculty members from the Biology Department.

ii. **Laboratory work**: Practical sessions allow students to gain hands-on experience in immunological techniques, experimental design, data analysis, and interpretation.

iii. **Research projects**: Students will have the opportunity to engage in research projects under the guidance of faculty members or in collaboration with external partners. This will provide them with exposure to research methodologies and a chance to contribute to the field of Immunology.

iv. **Empowering Students' Understanding**: The Research Laboratory W0414100, supporting the Immunology course, organizes supplementary seminars, workshops, and lectures conducted by experts from academia and industry. These events aim to enhance students' comprehension of immunology and its practical implications.

v. **Assessment and Testing**: Students undergo an evaluation that includes a combination of exams, ongoing assessments, and practical assignments, in accordance with the current regulations. The assessment process ensures a comprehensive evaluation of their understanding, skills, and proficiency in immunology.

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وزارة التعليم العالي والبحث العلمي
Ministère De L'enseignement Supérieur Et De La Recherche Scientifique

Université Abou BekrBelkaidTlemcen
ⵜⴰⵙⴷⴰⵡⵉⵜ ⴰⴱⵓ ⴱⴽⵔ ⴱⵍⵇⴰⵢⴷ ⵜⵍⵎⵙⵏ

Vice Rectorat de la Formation Supérieure de Graduation, de la Formation Continue et des Diplômes

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Télé/fax 043216198

جامعة أبو بكر بلقايد تلمسان
نيابة مديرية الجامعة
للتكوين العالي في التدرج والتكوين
المتواصل والشهادات

Branch: Food Sciences

1-Identification of the Education Offer

***Level*: Licence**

***Field* : Sciences of Nature and Life**

***Branch* : Food sciences**

***Speciality* : Food, nutrition and diseases**

2-Educational Establishment :

***Faculty/Institute:* Sciences of Nature and Life, Earth Sciences and Universe(SNV/STU)**

***Department:* Biology**

3-External partners

Algerian Academic partners:

University Hospital- Tlemcen

***Companies and other socio-economic partners*:**

Food processing companies

International partners :

University of Burgundy, Dijon, France

4-Context and objectives of the training:

Optimal nutritional status is an important factor in keeping our bodies functioning properly. Nutrient deficiencies are a clear example of this. Similarly, many illnesses can be attributed to a person's diet,

such as diabetes and obesity. That's why it's important to train students in the field of food and nutrition.

The overall aim of this project is to support the introduction of the LMD system at the University of Tlemcen. Its aim is to set up a professional degree entitled "Food, Nutrition Pathology". The planned degree is designed to enable students who have completed their second year (L2) in Biology to specialize. This L3 is original in that it is multi-disciplinary, and stands out for the richness of its teaching in the various fields of biology, which are fundamental for successful scientific studies in Biology. The aim of this specialty is to train students to adapt and integrate into various departments of the food processing, pharmaceutical and biotechnology industries, as well as national and international interface organizations.

5-Facilities, Equipment and Laboratoires

Laboratory name: analysis and quality control.

Laboratory title: Microbiology

Laboratory title: Animal Physiology

internships and company training

The library and WIFI at the university

The PhD students' office in the natural products(LAPRONA) laboratory.

6-Profiles and Competencies Targeted

Using the fundamental bases of nutrition, food and physiopathology, this degree in FOOD, NUTRITION AND PATHOLOGY prepares students for various biomedical, technological and fundamental research specialties, whether in a university hospital, school or industrial context.

A job market is developing for this training. This promising new niche in nutrition and dietetics could be a major source of innovation for the food processing industry. The challenges of nutrition for healthy and sick people will require the industry to carry out ongoing scientific assessments of the foods placed on the market. To achieve this, the industry needs, and will continue to need, expertise in nutrition and health within its research and development structure, to help it innovate and add value to its food products. This multi-disciplinary training program familiarizes students with the food processing sector

7-DevelopmentProspects and Employability

1- Job positions in various sectors:

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Healthcare institutions (university hospital)

Foodservice (school - company)

Public health structures ((partially) autonomous region,...)

Food processing companies

2- As a Nutrition and Health Educator

Dietitian

Nutritional communication trainer

Technical executive in the food-processing research and development.

8-Organisation of the SemestersTeaching

Semestre 5 :

- **Fundamental teaching units**
  - Physiology of major functions
  - Physiology of digestion
  - Food Biochemistry and regulation
  - Dietetic and Food composition
- **Methodological teaching units**
  - Molecular Biology Method applied to food analysis
  - stage
- **Discovery teaching units**
  - Nutraceutical and functional foods
- **Transversal teaching units**
  - English
  - Bioinformatics

Semester 6 :

- **Fundamental teaching units**
  - Food quality management
  - Toxicology and microbiological safety of food
- **Methodological teaching units**
  - Food technology and Biotechnology process
    Stage
- **Discovery teaching units**
  - Digestive Microbiology
  - Nutrition and immunity
- **Transversal teaching units**
  - Communication

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1-Identification of the Education Offer

***Level*: Licence**

Field : Natural and life sciences

***Branch* : Food Sciences**

***Speciality* : Agri- food technology and quality control**

2-Educational Establishment :

Faculty/Institute: Faculty of Natural and Life Sciences, Earth and Universe Sciences

Department: Biology

3-External partners

Algerian Academic partners:

- ***Ppubionut Laboratory***
- ***Laprona Laboratory***

***Companies and other socio-economic partners*:**

- National Institute for Plant Protection (IMPV).
- National Park of Tlemcen
- Moutasse hunting reserve in Tlemcen.
- hunting centre.
- Algerian National Institute for Agronomic Research (INRA) Tlemcen.
- Algerian National Institute for Agronomic Research (INRAA) Sidi Bel Abbes.
- Algerian National Institute for Agronomic Research (INRAA) Adrar.
- Agricultural Services Department (DSA) Tlemcen
- National Agricultural College (ENSA), El Harrach, Algiers.
- Direction of Health and Population (DSP).

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- - Chambers of Agriculture.
- - Algerian Centre for Quality Control and Packaging (CACQE).
- -Kherbouche Group Tlemcen
- -Giplait Tlemcen
- -Technofood Tlemcen
- - Private sector (farms such as Farm Belaidouni in Tlemcen).

International partners :

4-Context and objectives of the training:

As part of the development of the agri-food industry, the emergence of new technologies has led to a renewal of the industrial strategies of existing companies, the redeployment of agri-food laboratories and the growth of specialised companies that create jobs. In order to adapt to changes in the job market and promote integration into the business world, the national LMD training programme is evolving.

The aim of the LMD in agri-food industry technology is to train specialists with a broad spectrum of knowledge and skills in agri-food, enabling them to find employment in a variety of sectors: agriculture, dietetics, agronomy, agri-food, biotechnology, etc., where they can carry out different activities: production, food quality analysis and control, research and development, human nutrition, etc.

The LMD in agri-food attaches equal importance to basic scientific teaching, enabling the acquisition of fundamental knowledge that will facilitate the career development of graduates, to specialised applied teaching, rooted in professional practice, providing solid know-how, and to the assumption of responsibility leading to the development of interpersonal skills. Emphasis is placed on communication skills and the development of linguistic abilities.

5-Facilities, Equipment and Laboratoires

- Pedagogic laboratories
    - botany laboratory
    - plant physiology laboratory
    - biochemistry laboratory
    - microbiology laboratory
- Library of the Faculty of Life and Natural Sciences, Earth and Universe Sciences

- Central library of the university.
- Wi-Fi connection available in the faculty area.

6-Profiles and Competencies Targeted

Holders of this degree work in production, control and research and development in the agri-food, pharmaceutical, cosmetics and biotechnology sectors.

In production, they implement and control agricultural production operations (plant and animal) and the processing or manufacture of food or biological products. They improve the quality of agricultural products and production yields. They manage and plan all human and material resources in the context of plant, animal and industrial production, hygiene and safety. They monitor the quality of raw materials and products throughout processing. They define new equipment or processes to optimise the product quality process. They also take part in the formulation and development of new products. They may also take charge of or participate in the company's quality approach (leadership, ISO certification, training, auditing, etc.).

In research and development laboratories, they participate in the development and optimisation of new processes, equipment and products, as well as improving the yield of different types of production, whether plant or animal.

In quality control laboratories (public or private), they use microbiological, biochemical, sensory and physicochemical analytical techniques to ensure the quality and conformity of products within a standards context (accreditation, etc.)

7-DevelopmentProspects and Employability

- State services (Direction of Agriculture, OAIC, etc.)
- Private agri-food industries (specializing in food processing and preservation);
- Agricultural and biotechnological research centers;
- Food analysis laboratories;
- Universities, etc.

8-Organisation of the SemestersTeaching

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Semester 5 :

- **Fundamental teaching units**
  - Food microbiology
  - Food biochemistry
  - Agrifood industry technology
  - Food hygiene and safety
- **Methodological teaching units**
  - Biological characterisation of farm animal reproduction
  - Growth and reproduction of seed plants
- **Discovery teaching units**
  - Documentation techniques
  - Scientific English
- **Transversal teaching units**
  - Communication and writing techniques

Semester 6 :

- **Fundamental teaching units**
  - Food toxicology
  - Analysis techniques
  - Agrifood industry technology
- **Methodological teaching units**
  - Food Biotechnology
  - Food alteration
- **Discovery teaching units**
  - Business management
  - Biostatistics
- **Transversal teaching units**
  - Mini project

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Branch: Marine and Continental Hydrobiology

1-Identification of the Education Offer

Level **:**License

Field :Natural Sciences

Branch **:**Marine and Continental Hydrobiology

Speciality **:**Biology and Ecology of Aquatic Environments

2-Educational Establishment :

Faculty/Institute:Faculty of Natural and Life Sciences and Earth and Universe Sciences

Department:Ecology and environment

3-External partners

Algerian Academic partners:Es-Senia University- Oran

Companies and other socio-economic partners:

- DPRH: Fishes Resources Department in Tlemcen;
- ANBT: National Dams and Transfer Agency
- ADE (Algerian Water Company)
- ONA (National Sanitation Office)
- Forests Conservation
- DSA (Directorate of Agricultural Services)
- Department of the ministry of environment in Tlemcen

International partners :////

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4-Context and objectives of the training:

Tlemcen is recognized for its remarkable marine resources (coastal and continental) and economic interest (rich fauna and flora). The exploitation of this resources must be carried out in a reasoned and responsible manner, hence the need to collect scientific databases on these exploitable resources (taxonomic inventory, biology, dynamics, ecology, status of species of economic interest, …..).

The objective of the proposed specialty is to certify a first level of specialized skills in the field of generalbiology and aquatic environments. This first level will allow the student to integrate into the professional field and/or to specialize afterwards (Master, PHd).

5-Facilities, Equipment and Laboratoires

A- Laboratories and Equipment:

LaboratoryofZoology

Student capacity: 50

B- Company training

Port of Beni-saf

Port of Ghazaouet

Fishes Resources Department in Tlemcen

Oran University

C- Library which contains several books of hydrobiology

6-Profiles and Competencies Targeted

The lessons will allow the student to acquire knowledge in the exact and natural sciences (mathematics, chemistry, physics, cell biology, geology, ecology, zoology, botany, genetics, biochemistry, microbiology).

The student will discover the aquatic environment (hydrogeology, physico-chemistry and dynamics of water, as well as the ecology of aquatic environments and their communities (Benthos, Plankton)) and the biology of species (the physiology of aquatic organisms and the biodiversity). The training will be completed by the teaching of cartography, statistics, analysis techniques and research methodologies. The deepening of knowledge in the specialty is programmed, where the student will acquire basic knowledge for aquatic environments, such as development biology and population dynamics as well as the genetic improvement of organisms, finally pollution affecting these environments. Water legislation and English are essential units that will enrich the student's training.

7-Development Prospects and Employability

1. Administrative sector

1.1.Directions of fishes

- Technical and administrative advisers to the fishing directorates and.

1.2.Hydraulics administration, environment, forests, agriculture and dam agencies, Algerian water, Structures responsible for the management, treatment of water and waste.

- Technical advisers (valuation of wetlands)

. 2. Education sector

- Teachers in technical training schools for fishermen.

- Teachers in the national education sector.

3. Private sector

- Agents in aquatic product processing units

- Creators of micro-enterprises (Fishery products processing unit),

8-Organisation of the Semesters Teaching

A- Semester 5

Biodiversity

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Hydrogeology

Research methodology

Ecology of Marine and Continental Environments

Physiology of Aquatic Organisms

Bio Statistics

Water chemistry analysis techniques

Cartography

A- Semester 6

Marine and continental pollution and impacts

Management, protection and conservation of marine and continental environments

Biology and population dynamics

Genetic improvement of species of aquaculture interest

English

Legislation on water and aquatic environments

Computer science

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Branch: Ecology and Environments

1-Identification of the Education Offer

Level **:** License

Field : Natural Sciences

Branch **:** Ecology and Environments

Speciality **:** Ecology and Environments

2-Educational Establishment :

Faculty/Institute: Faculty of Natural and Life Sciences and Earth and Universe Sciences

Department: Ecology and environment

3-External partners

Algerian Academic partners: Saïda University

Companies and other socio-economic partners: ////

International partners : ////

4-Context and objectives of the training:

The main objective of the degree in ecology is the specialization of our young students in biology and more particularly in Ecology.

This academic license, of a fundamental nature, is necessary for the integration of young executives in the management of

populations and animal and plant organisms. It is a gateway for training in Masters specialized in the protection of the

environment and more precisely of fauna and flora.

It is a basic training for more in-depth studies on the biology and ecology of animal and plant populations with the sole

aim of protecting and conserving the habitats of several animal species subservient to increasingly fragile ecosystems.

In Algeria and especially in western Algeria, studies on animal populations are very little established and the field of research is open.

This training is therefore a first step which will make it possible to acquire basic knowledge empowered to initiate young

researchers and prepare them for further training in the field of biology and terrestrial and aquatic plant and animal biodiversity in our country.

This license is a training that responds to the attractions of several teacher-researchers in our department of ecology and environment

who wish to promote the ecology and biology of populations and terrestrial and marine ecosystems and make it a science in its own right.

Teaching and supervision will be provided by a group of highly motivated teachers belonging to the same department. The number

of teachers in the department of ecology and environment specialized in biology and animal ecology is considerable (seven professors,

eight lecturers, seven assistant professors) all capable of intervening to ensure effective and operational teaching. Thus, the students

will have a relevant training allowing them to acquire fundamental knowledge necessary for a preparation for more advanced

but also applied studies capable of helping them to integrate the professional sectors in the field of the

environment and the protection of fauna. and flora of natural, continental and marine environments.

Students will acquire knowledge and skills in the field of fundamental ecology, biosystematics, management of animal

populations and animal and plant protection and conservation.

5-Facilities, Equipment and Laboratoires

A- Laboratories and Equipment:

educational laboratory

Student capacity: 50

B- Company training

National Park

hunting reserve

environment department

hunting center

wastewater treatment plant

desalination plant port of ghazaouet

C- Library which contains several books of ecology

6-Profiles and Competencies Targeted

Thus, through this specialty, we also plan to train students and fill the gap in terms of qualified teacher-researchers in Ecology and Environment and develop lines of research that can contribute, in collaboration with vital sectors (health, industries, agronomy, agri-food , treatment plants, etc. to the development of the university. Our training will go in this direction where should allow a complementarity between the university and the industry through the sciences of the environment. In addition to the socio-economic objectives, this training has the scientific purpose of giving our students technical and practical knowledge used in microbiology and ecology of aquatic ecosystems,

usually the determination of the biological, microbiological and physicochemical qualities of the waters of its environments.

7-DevelopmentProspects and Employability

Education,

Research,

Passage to the masters,

Environment,

Ecology,

Agriculture,

Forest,

8-Organisation of the SemestersTeaching

A- Semester 5

bioclimatology

geomorphology

ecopedology

environmental pollution environmental

analysis and protection animal and plant methodology animal and plant

ecophysiology

Descriptive statistics

introduction to the french language

B-Semester 6

biology of populations and organisms biogeography

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biodiversity and global changes conservation and sustainable development

biocenosis

work and research method

English

entrepreneurial