Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*biological sciences*	*Applied Biochemistry*

Course leader	
Cycle : Master's	
Course title: UEF11: Fundamental (Compulsory)	
Biomembrane and Bioenergetics	
Course content :	
Chapter I	- origin and evolution of the biomembrane concept;
ChapterII	- physico-chemical properties of lipids; - formation of micelles and lipid bilayers;
ChapterIII	- membrane proteins; - description of the structure of membrane proteins and their interactions with phospholipids; - intrinsic and extrinsic proteins; - membrane protein assembly, - their thermodynamic and dynamic properties;
ChapterIV	- transport of metabolites and ions across membranes; - membrane ion pumps (Na-K, Ca); - explanation of the active transport process; - description of the structure and molecular mechanism of ion pumps; - regulation of their activity by phosphorylation;
ChapterV	- mitochondria; - the Krebs cycle and the respiratory chain,
ChapterVI	- dehydrogenases, cytochromes and Green's complexes; - chemiosmotic theory;
Chapter VII	- ion transport and thermogenesis; - ATP synthase, its mechanism; - the permeability transition pore.
Chapter VIII	- pH
Chapter IX	- photosynthesis;
Chapter X	- oxygen free radicals;

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Life	Master 1	*Applied Biochemistry*

Course leader REBAI Redouane	
Cycle : Master1, semestre 1	
Course title: Food biochemistry and physicochemistry, UEF112	
Course content :	
Chapter I	The constituents of foods and their properties
ChapterII	Sensory properties of foods.
ChapterIII	Modification of organoleptic characteristics
ChapterIV	Foods of animal origin.
ChapterV	Foods of plant origin.
ChapterVI	Fatty substances. Introduction. Change processing
Chapter VII	Additives. Definition. Technological additives. Sensory additives. Additive for nutritional purposes.

Chapter VIII	Food spoilage and means of control
Chapter IX	
Chapter X	

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*Biological Sciences*	*Applied Biochemistry*

Course leader : AMINA YAHYAOUI	
Cycle : MASTER 01	
Course title : PHARMACOLOGY	
Course content :	
Chapter I	General information about medication
ChapterII	Origin and nature of medicines
ChapterIII	Main groups of active substances
ChapterIV	Pharmacokinetics of medicinal products
ChapterV	Pharmacodynamics of drug substances
ChapterVI	
Chapter VII	
Chapter VIII	
Chapter IX	
Chapter X	

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*Master 1*	*Biochemistry*

Course leader : MERABTI Ibrahim	
Cycle : Master 1	
Course title: Toxicology UEF212	
Course content :	
Chapter I	General Toxicology Data
ChapterII	Nature of the different toxic groups
ChapterIII	Mechanisms of action of toxicants
ChapterIV	Toxicological study
ChapterV	Typical principles of poisoning
ChapterVI	Mutagenesis, carcinogenesis and teratogenesis

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*Master 1*	*Applied Biochemistry, Applied Microbiology, Biotechnology and Plant Development, Parasitology.*

Course leader : Asma MEDDOUR	
Cycle : 2023 / 2024	
Course title : Tools and Methodology of Molecular Biology	
Course content :	
Chapter I	Tools of molecular biology 1. Enzymes: restriction enzymes: origin, nomenclature and methods of restriction 2. Cloning vectors 3. DNA banks (DNAc preparation, genomics)
ChapterII	Methods of molecular biology 1. Extraction and purification of nucleic acids 2. PCR strategy 3. Sequencing 4. Cloning 5. Molecular hybridization 6. Nucleic acid electrophoresis 7. South and North Blot 8. Western blotting for proteins 9. ELISA

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*Master 1*	*Biochemistry*

Course leader :	
Cycle : Master 1	
Course title: Immunological and Radio-biological Techniques TIRB-MB16UEM11	
Course content :	
Chapter I \ *Applied immunology*	*Mechanisms of the antigen-antibody reaction* *2\ Obtaining immunological reagents:* *2.1 polyclonal antibodies* *2.2 monoclonal antibodies* *2.2.1 hybridization techniques* *2.2.2 interest and application of monoclonal antibodies* *3\ Measurement of cellular immunity:* *3.1 lymphoblastic transformations* *3.2 measurement of cellular cytotoxicity* *3.3 measurement of cytokines* *4\ Immunochemical techniques and areas of application:* *4.1 immunodiffusion* *4.2 immunoelectrophoresis* *4.3 immunoenzymology, case of ELISA*
ChapterII *Radiobiological techniques*	*1\ Radioisotopes and their use* *1.1 research using tracer elements* *1.2 industrial applications* *1.3 medical applications* *2\ Radiometric analysis* *3\ Analysis by isotope dilution* *4\ Radioimmunological assays*

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*Master 1*	*Applied Biochimestry*

Course leader : DOUADI Yacer	
Cycle : Master 1	
Course title: Communication	
Course content :	
Chapter I	Strengthening language skills
ChapterII	Communication methods
ChapterIII	Internal and external communication
ChapterIV	Meeting techniques
ChapterV	Oral and written communication

Establishment	Faculty	Department

Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Natural Sciences and Life	*Master*	*Applied Biochemistry* ----

Course leader : *Boulmaiz sara*	
Cycle : *Master First year S2*	
Course title: *Microbial Biochemistry*	
Course content :	
Chapter I	**I. Introduction:** Energy, anabolism, catabolism
ChapterII	**II. Energy metabolism in microorganisms:** -Energy source and trophic types; -Final electron acceptor and types of respiration
ChapterIII	**III. Carbohydrate catabolism:** • Glycolysis or the embden-meyerhoff pathway • Alternatives to glycolysis • Anaerobic pyruvate metabolism • The tricarboxylic krebs cycle • The glyoxylic shunt • Fermentations derived from the krebs cycle or the glyoxylic shunt. Relative importance of these metabolic pathways in different types of microorganisms: - bacteria, yeasts, molds • Carbohydrate catabolism in yeast (anaerobic and aerobic, applications).
ChapterIV	**IV. Study and interest of some metabolic types :** 1. Aerobic lithotrophs (nitifying bacteria) 2. Anaerobic lithotrophs (sulfate-reducing bacteria, methanogenic methanogenic bacteria, etc.) 3. Aerobic and anaerobic organotrophs (pseudomonas, acetic bacteria acetic bacteria, etc.) 4. Fermenting organisms - alcoholic fermentation

	- lactic fermentation - cases of mixed acid and butanediol fermentation - butyl fermentation - propionic fermentation
ChapterV	**V. Catabolism of other organic compounds :** - lipids - proteins - carbohydrates - monocarbon compounds ethanol and glycerol - applications
ChapterVI	**VI. Anabolism and production of biomass and metabolites :** - amino acid production - lipid production - nucleotide production - production of antibiotics - hormone production - toxin production - polysaccharide production - enzyme production

Establishment	Faculty	Department

Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*Master*	***Applied Biochemistry***

Course leader	
Cycle : Master 1 S 2	
Course title: Molecular and functional neurobiology	
Course content :	
Chapter I	**General notions about the nervous system** 1. Cytology of the neuron and associated cellular elements 2. Histology and anatomy of the nervous system 3. Embryology and development 4. In-vitro culture of neurons and associated cells
ChapterII	**Chemistry of the nervous system** 1. The chemical constituents of the nervous system 2. Chemical transmitters • The cholinergic system • The cathecol-indolaminergic system • Other neurotransmission systems 3. Molecular and cellular pharmacology of neurotransmitters
ChapterIII	**Electrophysiology of the nervous system** 1. Electrophysiology of the neuron 2. Electrophysiology of brain structures
ChapterIV	**Molecular bases of behavior** 1. Learning and memory 2. Sleep and Wakefulness 3. Aggressiveness 4. Pain 5. Thirst, hunger and thermogenesis 6. Other behaviors

Establishment	**Faculty**	**Department**

Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*Master*	***Applied Biochemistry***

Course leader : *Kenza Mohammedi*	
Cycle : *Master 1st year*	
Module: Gene expression in prokaryotes and Regulation	
Module content :	
Chapter I :	**Gene organization and expression mode**
Chapter II :	**Gene regulation in prokaryotes :** - Notions of control (+) and (-) - Regulation through genomic rearrangements - Transcriptional control of gene expression: induction of the lactose operon, repression of the tryptophan operon, control of lytic/lysogenic cycles of phage λ- - Control of trans/trad coupling: attenuation of the tryptophan operon.

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*Master*	***Applied Biochemistry***

Course leader	
Cycle : Master 1 S 2	
Course title: Eucaryote gene expression and regulation	
Course content :	
	Organization of a gene and mode of expression Gene regulation in eukaryotes: - eukaryotic promoter: transcription initiator complex, transcription factors, notion of enhancer and silences - RNA maturation, cell cycle, example of integrated control: mitotic cyclins

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Life	Master 1	Applied Biochemistry

Course leader REBAI Redouane
Cycle : Master1, semestre 2
Course title: Bioinformatics, UED121
Course content :

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Bioloogy*
Domain	**Study**	**Specialty**
Natural Sciences and Life	*Bioloogy*	**Biochemie.* **Microbiology.* **vegetal biology.* **Animals biology*

Course leader : *Chala Adel*	
Cycle : *Master 1*	
Course title: *Biostatistics*	
Course content :	
Chapter I	**Definitions of concepts:** - *Descriptive Statistic.* - *Characteristics parameters.*
Chapter II	**Interferential statistics** - Introduction to distribution laws: normal law - Principle of testing: conformity testing - Comparison of multiple means: one-way analysis of variance – Two ways analysis of variance ANOVA2 Two ways analysis of variance with repetition. Two ways analysis of variance without repetition.
Chapter IV	**Correlation of two variables** - Regression with an explanatory variable - Determination of the correlation coefficient - Determination of the slope of the line
Chapter V	**Statistical tests** -Homogeneous test of variation *Kolmogorov test. *Shapiro-Wilk test.
Chapter IX	**-Application with SPSS, and the use of calculator.** **-Application examples in biology science.**

Establishment	Faculty	Department
Mohamed Khider University, Biskra	*Faculty of Exact Sciences and Natural Sciences and Life*	*Natural Sciences and Life*
Domain	**Section**	**Specialty**
Naturel Science and Live	*Natural Sciences*	*Applied Biochemistry*

Course leader : Dr ZEROUAL Samir	
Cycle : First Master	
Course title: Legislation	
Course content :	
Part I	• General concepts of law (introduction to law, criminal law). • Presentation of Algerian legislation (www.joradp.dz, references to texts). • General regulations (consumer protection law, hygiene, labeling and information, food additives, packaging, brand, safety, preservation). • Specific regulations (individual work, presentations). • Control organizations (CPD, ACCQUE, The municipal hygiene office, NOLM). • Standardization and accreditation (IANOR, ALGERAC). • International standards (ISO, Codex Alimentarius, NA, AFNOR).
Part II	General information on Principles of good laboratory practice and ethical standards of the profession. I. Place of experimentation in society 1. Legitimacy of animal experimentation 2. Animal protection 3. Design of experimental procedures and projects II. Ethics in animal testing 1. Reasons for using animals in experiments 2. Rule of 3 Rs 3. Ethics Committee 4. Duties of animal users III. Food safety. Hazard analysis and control. Quantitative risk analysis. Regulatory and normative aspects.

	Psycho-sociological aspects of food security, trust and crisis IV. The main texts on radiation protection