

AL-MUSTAQBAL UNIVERSITY
جامعة المستقبل



*First Cycle – Bachelor's degree (B.Sc.) –
Biochemistry Science*

بكالوريوس علوم – قسم الكيمياء الحياتية

جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

RANKING WEB OF UNIVERSITIES

WORLD UNIVERSITY RANKINGS

صرح علمي برؤية متجددة

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1. Mission & Vision Statement

Vision Statement

The branch looks forward to become a leader in providing academic education and advanced scientific research in the field of biochemistry by preparing specialized graduates equipped with the skills and competencies necessary to keep pace with modern developments in the fields of chemistry, medicine, biotechnology, and the environment.

We strive to offer high-quality education characterized by academic excellence, while enhancing students' abilities in innovation, scientific analysis, and teamwork within a distinguished framework at both local and international university levels.

Mission Statement

The mission of the Biochemistry Department is to provide high-quality education by fostering a learning environment that supports the development of scientific and practical knowledge in the field of biochemistry. This is achieved through the use of advanced teaching methods, practical applications, and innovative research projects.

The department aims to enable students to understand chemical processes in living organisms and to develop scientific solutions to health and environmental challenges. It also seeks to strengthen collaboration with academic, industrial, and medical institutions to make effective contributions in the areas of research and development within the community.

2. Program Specification

Programme code:	BSc-CS	ECTS	240
Duration:	4 levels, 8 Semesters	Method of Attendance:	Full Time

The Department of Biochemistry is one of the key scientific departments that integrates concepts from chemistry and biology to study vital processes at the molecular level. The department aims to equip students with in-depth knowledge of how chemical substances interact within living organisms, including interactions among proteins, nucleic acids, lipids, and carbohydrates—factors that influence human health, nutrition, and the environment.

By studying biological processes such as enzymatic reactions, metabolic pathways, and endocrine functions, students learn how to apply this knowledge across various fields including medicine, veterinary science, agriculture, and biological data analysis.

Biochemistry plays a crucial role in developing solutions for medical and health research, supporting advancements in precision medicine, disease diagnosis, and drug development. The department also serves as a hub for expanding the scope of advanced biological and environmental studies, contributing to the preservation of biodiversity and interaction with the environment.

3. Program Goals

1- Providing Advanced Academic Education

Preparing students specialized in biochemistry through a comprehensive academic program that delivers advanced scientific content integrating chemistry, life sciences, and medical and environmental applications.

2- Promoting Scientific Research

Enhancing applied scientific research in areas such as biomedical science, biotechnology, environmental protection, and precision medicine, contributing to the development of innovative scientific solutions to health and environmental challenges.

3- Developing Practical and Technical Skills

Training students in the use of advanced tools and techniques, such as genetic analysis, analytical chemistry, and environmental analysis technologies, to ensure the development of their practical skills and readiness for the job market.

4. Providing Specialized Scientific Consultation

Supporting governmental, health, and environmental institutions by offering scientifically grounded consultation to assist in informed scientific and technical decision-making.

5. Enhancing Students' Academic Level

Developing students' critical thinking, research, and analytical skills, and strengthening their ability to work collaboratively and solve complex scientific problems.

6. Supporting Innovation and Professional Development

Encouraging students to innovate and develop independent research projects that contribute to creative solutions in biochemistry, while also enhancing their professional skills for active participation in advanced research and industrial teams.

7. Fostering Scientific Communication and Knowledge Exchange

Strengthening academic relationships with local and international universities and research institutions through participation in conferences, workshops, and collaborative research projects.

4. Student Learning Outcomes

This report includes information about the Department of Biochemistry at Al-Mustaqbal University. This specialization provides a knowledge base for understanding biological processes at the molecular and cellular levels, focusing on the study of chemical reactions that occur within living organisms.

Graduates work in various fields including education, scientific research, laboratory analysis, and the design and development of pharmaceutical and biological industries. They also possess expertise in chemical and biochemical analysis techniques, an understanding of enzyme mechanisms, metabolic pathways, and intracellular signal transduction. In addition, they are skilled in operating modern laboratory instruments and analyzing biochemical data. Graduates also have an advanced understanding of the structures of biomolecules, their interaction mechanisms, and the techniques used to detect and study them.

Outcome 1

Communication

Graduates will be able to understand and analyze complex biochemical relationships and interactions at the molecular and cellular levels. They will be capable of designing and conducting experiments to study metabolic pathways, enzyme kinetics, and molecular signaling mechanisms. Additionally, graduates will be equipped to interpret biochemical data and build models that explain the dynamic processes involved in biological systems and their relevance to health, disease, and biotechnology applications.

Outcome 2

Oral and Written Communication

Graduates will be able to understand biochemical problems and propose appropriate scientific solutions. They will effectively communicate the results of laboratory investigations and research studies using both oral and written communication skills. This includes presenting findings supported by data collection, experimental procedures, biochemical analysis, and interpretation of results using modern biochemical techniques and scientific reasoning.

Outcome 3

Laboratory and Field Studies

Graduates will be able to conduct biochemical laboratory experiments and field studies using appropriate scientific instruments and computer-based technologies. They will demonstrate proficiency in handling biological samples, preparing chemical solutions, and operating modern biochemical equipment, while strictly adhering to safety standards and laboratory protocols.

Outcome 4

Scientific Knowledge

Graduates will be able to demonstrate a comprehensive understanding of how scientific knowledge in biochemistry has developed over time, including the historical evolution of key biochemical theories, discoveries, and principles. They will also be able to explain the nature of scientific inquiry in biochemistry and how experimental evidence contributes to the advancement of knowledge in the field.

Outcome 5

Data Analyses

Graduates will be able to demonstrate scientific quantitative skills relevant to biochemistry, including the ability to perform basic data analyses of experimental results. This involves interpreting biochemical data, calculating concentrations, reaction rates, and enzyme activities, as well as using statistical tools to evaluate the accuracy and reliability of laboratory findings.

Outcome 6

Critical Thinking

Graduates will be able to apply critical thinking and problem-solving skills to develop and conduct biochemical research projects and/or write scientific papers. They will be capable of formulating hypotheses, designing experiments, analyzing results, and drawing evidence-based conclusions in the context of biochemical and molecular biological studies.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

Al-Mustaqbal University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 student workloads, including structured and unstructured workloads.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	إمتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جداً	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group	FX – Fail	مقبول بقرار	(45 - 49)	More work required but credit awarded

(0 – 49)	F – Fail	راسب	(0 - 44)	Considerable amount of work required
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Note:

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Calculation of the Grade Point Average (GPA)

1. The GPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program's total ECTS.

GPA of 4-year B.Sc. degrees:

$$\text{GPA} = [(1\text{st module score} \times \text{ECTS}) + (2\text{nd module score} \times \text{ECTS}) + \dots] / 240$$

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOMU036111	Qualitative Analytical Chemistry	65	135	8.00	Basic	---
UOMU036112	Physical Chemistry	65	135	8.00	Basic	---
UOMU036113	Introduction to Chemistry	65	85	6.00	Basic	---
UOMU036114	Mathematics	33	67	4.00	Basic	---

UOMU000001	Arabic 1	33	17	2.00	Basic	---
UOMU000004	Democracy and Human Rights	34	16	2.00	Suplement	---

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOMU036121	Quantitative Analytical Chemistry	64	111	7.00	Basic	----
UOMU036122	Inorganic Chemistry	64	111	7.00	Basic	----
UOMU036123	Biology	63	87	6.00	Basic	----
UOMU036124	Physics	63	62	5.00	Basic	----
UOMU0000022	Computer 1	48	27	3.00	Basic	----
UOMU000002	English 1	33	17	2.00	Basic	----

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOMU036231	Basic Biochemistry	78	122	8.00	Core	---
UOMU036232	Organic Chemistry (part one)	63	137	8.00	Basic	---
UOMU036233	Analytical Techniques	63	87	6.00	Basic	---
UOMU036234	Kinetic Chemistry	63	37	4.00	Basic	---

UOMU036035	Microbiology	34	16	2.00	Basic	---
UOMU0000010	The Crimes of Baath Regime in Iraq	33	17	2.00	Supplement	--

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOMU036241	Biochemical techniques	79	96	7.00	Basic	---
UOMU036242	Organic chemistry (part 2)	79	96	7.00	Basic	---
UOMU036243	Energy and Membrane Biology	61	64	5.00	Basic	---
UOMU036244	Immunity	63	37	4.00	Basic	---
UOMU036245	Computer 2	63	12	3.00	Basic	---
UOMU0000014	English 2	33	17	2.00	Basic	---
UOMU0000012	Arabic 2	33	17	2.00	Basic	---

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOMU036351	Clinical Biochemistry I	79	96	7.00	Basic	---
UOMU036352	Lipid Chemistry I	65	85	6.00	Basic	---

UOMU036353	Nucleic Acids Chemistry I	65	85	6.00	Basic	---
UOMU036354	Biostatistics	63	37	4.00	Basic	---
UOMU036355	Industrial Biochemistry	63	37	4.00	Basic	---
UOMU036356	Scientific Thinking and Research Skills	43	32	3.00	Suplement	----

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOMU036361	Clinical Biochemistry II	79	96	7.00	Basic	---
UOMU036362	Lipid Chemistry II	65	85	6.00	Basic	---
UOMU036363	Nucleic Acids Chemistry II	65	85	6.00	Basic	---
UOMU036364	Drug Stereochemistry	63	62	5.00	Basic	---
UOMU036365	Nanobiochemistry	63	37	4.00	Basic	---
UOMU036366	Communication Skills	33	17	2.00	Suplement	---

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOMUS036471	Biomarkers	79	96	7.00	Basic	---

UOMUS036472	Hormones I	79	96	7.00	Basic	---
UOMUS036473	Clinical Enzymology	63	62	6.00	Basic	---
UOMUS036474	Biominerals and Natural Products	63	62	5.00	Basic	---
UOMUS036475	Free Radicals and Antioxidants	63	37	4.00	Basic	---
UOMUS036476	Ethics in Biochemistry Practice	47	38	2.00	Suplement	---

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
UOMUS036481	Hormones II	79	96	7.00	Basic	---
UOMUS036482	Metabolism	79	96	7.00	Basic	---
UOMUS036483	Genetic Engineering	63	87	6.00	Basic	---
UOMUS036484	Vitamins	63	62	5.00	Basic	---
UOMUS036485	Innovation and Entrepreneurship	43	32	3.00	Basic	---
UOMUS036486	Graduation Project	30	20	2.00	Suplement	---

8. Contact

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