AlKarkh University of Science

First Cycle – Bachelor's degree (B.Sc.) – Microbiology

بكالوريوس علوم - علم الأحياء المجهرية

Table of Contents | جدول المحتويات

1. Mission & Vision Statement | بيان المهمة والرؤية
2. Program Specification | مواصفات البرنامج
3. Program Goals | أهداف البرنامج
4. Program Student learning outcomes | مخرجات تعلم الطالب
5. Academic Staff | الهيئة التدريسية
6. Credits, Grading and GPA | الاعتمادات والدرجات والمعدل التراكمي
7. Modules | المواد الدراسية
8. Contact | اتصال

1. Mission & Vision Statement

Vision Statement

The academic staff of the Microbiology Sciences Department at AlKarkh University believes that students come to understand the discipline of microbiology through a combination of class lectures, laboratory experiences, homework, and fieldwork. The use of different instructional methods leads students to a balanced understanding of the scientific methods used by biologists and microbiologists to make observations, develop insights and create theories about the pathogenic and nonpathogenic microorganisms that are related to humans and their environment. The class and lab work within the microbiology program fosters a close working relationship between academic staff and students in an informal and nurturing atmosphere.

Mission Statement

The microbiology academic staff pursues a multifaceted charge at AlKarkh University. The Program seeks to provide all microbiology students with fundamental knowledge of biology and microbiology, as well as a deeper understanding of pathogens and their related diseases. The curriculum and advising have been designed to prepare graduates for their professional future, whether they choose to work as microbiologists specializing in medical and health sciences or to pursue advanced degrees in the microbiology sciences at universities. The microbiology program also provides the necessary fundamental knowledge of the life sciences to other departments of AlKarkh University in many topics such as general biology, histology, and anatomy. In addition, microbiology courses provide key laboratory science experiences for those students seeking to complete the general education requirements or working in private labs.

2. Program Specification

Programme code:	MBO	**ECTS**	240
Duration:	4 levels, 8 Semesters	**Method of Attendance:**	Full Time

Microbiology is a wide-ranging topic including many other branches such as pathogenic microbiology, industrial microbiology, immunology, and environmental microbiology. The emphasis of the program is the whole microorganism to which everything is related, be it the components that form them or communities of microorganisms in humans and related ecosystems. The degree in microbiology is popular not because of it breadth of the subject that appeals but its path to specialization in a special field. All students have the opportunity to get specialist information in microbiology, biology, Genetics, and Ecology at the end of the fourth year.

Level 1 exposes students to the fundamentals of basic sciences such as Biology, Chemistry, Physics, and other sciences suitable for progression to all programs within the microbiology program group, as well as other topics related to microbiology. Also, the first level will cover the program-specific core topics at Level 2 preparing for specialist modules at Levels 3 and 4.

At each level of 2, 3, and 4 students are free to choose some module credits according to level with the proviso a range of modules are selected that reflect the importance of the course to the topics of the subsequent semesters or levels such as the biomolecules that make up the microorganisms, and human bodies to ensure the breadth of knowledge expected of a graduate with a microbiology degree. This allows students to develop their interests in microbiology and related topics. Decisions on what to study are made with input from personal tutors.

The practical part is used to develop and foster the research ethos in students from the start of studying, which is either taught in dedicated practical modules or embedded in lecture modules, or within research seminars, and tutorials. There is a field course at all levels, in which students must participate. While at Level 4 all students must carry out an independent research project, which may be a practical project or theoretical project.

Academic tutorials are held at all levels with the same tutor, who is also the personal tutor, providing continuity and progressive guidance. These tutorials include several workshops to teach skills, e.g. library use and presentation skills, followed by assessed exercises to practice these skills on special topics, as well as, all other local or international skills for students are offered and individual needs are discussed with the appropriate tutor and accommodated wherever possible.

3. Program Goals

1. To provide a comprehensive education in microbiology that stresses scientific reasoning and problem-solving across the spectrum of disciplines within microbiology and related topics.
2. To prepare students for a wide variety of paths after graduation, including graduate studies, professional training programs, or private jobs in any area of microbiology
3. To provide the students the extensive hands-on training in laboratory skills, field techniques, statistical analysis, and electronic technology.
4. To provide thorough training in written and oral communication of scientific information
5. To enrich students with opportunities for alternative education in the area of microbiology through undergraduate research, internships, and study-abroad

4. Student Learning Outcomes

microbiology is the study of the organization and operation of microorganisms at the molecular and cellular levels as well as their effects on humans, organisms, and environments. Graduates obtain information on the historical, technical, and pathological aspects of microbiology and utilize basic knowledge toward realizing broader concepts. The Department offers a Bachelor of Science in microbiology with a concentration in General Biology, Biotechnology, and Molecular Biology. Additionally, the Department offers courses to a large number of students from other departments and supports pre-professional programs. The microbiology curriculum and experiences are designed to prepare students, in part, for entry into professional health programs, graduate studies, technical careers, and education.

Outcome 1

Composition, Function, Pathogenicity, and Their Relationship:

Graduates will be able to illustrate the structure and function of cellular and genetic components and explain how they affect human pathogenicity.

Outcome 2

Laboratory and Field Studies:

Graduates will be able to perform laboratory experiments and field studies, by using scientific equipment and computer technology while observing appropriate safety protocols.

Outcome 3

Scientific Knowledge Skills:

Graduates will be able to demonstrate a balanced concept of how scientific knowledge develops, including the historical development of foundational theories and laws and the nature of microbiology science and other related sciences.

Outcome 4

Oral and Written Communication:

Graduates will be able to formally communicate the results of microbiological investigations using both oral and written communication skills.

Outcome 5

Data Analysis and their Presentation:

Graduates will be able to analyze quantitative and qualitative scientific results and demonstrate them in simple ways such as the ability to conduct simple data analyses and put them in figures or tables with their normal values.

Outcome 6

Critical Thinking:

Graduates will be able to use critical thinking to suggest the solving methods to develop a research project and/or paper as well as suggest the best plan to solve that in a short time.

5. Academic Staff

Dr. Saad Hussein Khudhair | Ph.D. in Biotechnology | Assistant Prof.
Email: saad_2019@kus.edu.iq
Mobile no.: 07714677773

Dr. Zainab Thamer Shwit | Ph.D. in Biology | Assistant Prof.
Email: ztsayy@kus.edu.iq
Mobile no.: 07728488623

Dr. Mahdi Haider Hammadi| Ph.D. in Biology | Assistant Prof.
Email: mahdi.h@kus.edu.iq
Mobile no.: 07747153651

---

6. Credits, Grading, and GPA

Credits

AlKarkh 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 hrs student workload, including structured and unstructured workload.

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	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	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 (0 – 49)	FX – Fail	راسب - قيد المعالجة	(45-49)	More work is required but credit awarded
	F – Fail	راسب	(0-44)	A considerable amount of work required
Note:				
The number of 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 Cumulative Grade Point Average (CGPA)

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

   CGPA of a 4-year B.Sc. degree:

   CGPA = [(1st module score x ECTS) + (2nd module score x ECTS) + ……] / 240

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
KUS 1101	Mathematic	63	62	5.00	B	No
KUS1102	Fundamental of computer science	48	27	3.00	B	No
KUS1103	Democracy and Human rights	33	17	2.00	B	No
SCI 1104	General Biology	93	82	7.00	B	No
SCI 1105	General Chemistry	93	82	7.00	B	No
MBO 1106	Fermentation technology	78	72	6.00	S	No

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MBO 1207	Organic chemistry	78	72	6.00	B	No
MBO 1208	General Microbiology	78	97	7.00	C	No
MBO 1209	Molecular biology	78	72	6.00	C	No
KUS 12010	Arabic language	33	17	2.00	B	No
KUS 12011	English Language	33	17	2.00	B	No
SCI 12012	General Physics	78	97	7.00	B	No

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MBO 23013	Cell Biology	78	72	6.00	C	No
MBO 23014	General Mycology	63	62	5.00	S	No
MBO 23015	Basic Physiology	78	72	6.00	C	No
KUS23016	Crimes of the baath regime in Iraq	33	17	2.00	B	No
MBO 23017	Biochemistry	78	72	6.00	S	No
MBO 23018	Soil Microbiology	78	47	5.00	C	No

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MBO 24019	General Histology	63	87	6.00	C	No
KUS 24020	Arabic language	33	17	2.00	B	No
KUS 24021	English Language	33	17	2.00	B	No
MBO 24022	Applications of computer science	48	27	3.00	B	No
MBO 24023	General Virology	63	87	6.00	C	No
MBO 24024	General Bacteriology	63	87	6.00	C	No
MBO 24025	General Parasitology	63	62	5.00	C	No

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MBO 35026	Microbial genetic	63	62	5.00	C	No
MBO 35027	Food Microbiology	78	72	6.00	C	No
MBO 35028	Histopathology	63	37	4.00	C	No
MBO 35029	Microbial Physiology	63	62	5.00	C	No
MBO 35030	Fundamentals of Immunology	78	72	6.00	C	No
MBO 35031	Biostatics	63	37	4.00	B	No

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MBO 36032	Genetic engineering	63	87	6.00	C	No
MBO 36033	Aquatic Microbiology	78	72	6.00	S	No
MBO 36034	Biotechnology	63	62	5.00	C	No
MBO 36035	Microbial Enzymes	78	72	6.00	C	No
MBO 36036	Pathogenic Bacteria	78	72	6.00	B	No
MBO 36037	Research Methodology	18	7	1.00	S	No

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MBO 47038	Fundamentals of pathological analyses	63	62	5.00	C	No
MBO 47039	Serological and vaccine	78	72	6.00	C	No
MBO 47040	Pathogenic Virology	78	72	6.00	C	No
MBO 47041	Microbial Toxins	78	72	6.00	C	No
MBO 47042	Antibiotics	63	62	5.00	C	No
MBO 47043	Ethics of Scientific Research	33	17	2.00	B	No

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
MBO 48044	Clinical Chemistry	63	62	5.00	C	No
MBO 48045	Clinical Immunity	63	62	5.00	C	No
MBO 48046	Hematopathology	63	62	5.00	C	No
MBO 48047	Immune Chemistry	63	62	5.00	C	No
MBO 48048	Biosafety	33	17	2.00	C	No
MBO 48049	Graduation Project	93	107	8.00	B	No

8. Contact

Program Manager:

Dr. Asmaa Sami Ibrahim | Ph.D. in Biology | Assistant Prof.

Email: asmaasami@kus.edu.iq

Mobile no.: 07713077731

Program Coordinator:

Dr. Mustafa Abdel-Hussein Abdel-Amir | Ph.D. in Biology | Assistant Prof.

Email: mustafa.a@kus.edu.iq

Mobile no.: 07713458525