Program Catalogue | 2024-2025 |

University of Mosul

College of Science

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

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1. Mission & Vision Statement

Vision Statement

In the Department of Biology, we strive to be at the forefront of educational institutions that contribute to the development of scientific and technical competencies by making strenuous efforts to apply the latest scientific curricula that combine the basics and continuous development to serve society, sustainable development, and excellence in disseminating knowledge in the fields of life sciences (botany, zoology, and microbiology) through scientific research, where students can explore new horizons and develop innovative solutions to contemporary challenges. We believe that education should be a catalyst for permanent change to serve the requirements of the labor market.

Mission Statement

The Department of Biology at the College of Science is committed to providing a unique educational experience that aims to equip its students with the knowledge and practical skills necessary to deal with the various challenges in the field of different life sciences (botany, zoology, and microbiology). We also seek to enable our department graduates to be pioneers and possess professional experiences that enable them to enjoy good opportunities locally and globally by enhancing their ability to think scientifically and solve problems in innovative ways, which contributes to achieving sustainable development and providing the labor market with these competencies and making efforts to hone students' talents and develop their capabilities to help develop and advance society.

2. Program Specification

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

Preparing qualified graduates with knowledge and creativity in the field of biology, who are able to interact with the requirements of the age and technology, and contribute to building Iraqi society on sound scientific and ethical foundations.

Level 1 exposes students to the fundamentals of Biology, suitable for progression to all programmes within the biology programme group. Programme-specific core topics are covered at Level 2 preparing for research-led subject specialist modules at Levels 3 and 4. The University Biology graduate is therefore trained to appreciate how research informs teaching, according to the University and School Mission statements.

At Levels 2, 3 and 4 students are free to choose more than half of their module credits with the proviso a range of modules are selected that reflect the complexity of life forms from molecules, through organisms, both plants and animals, to populations to ensure the breadth of knowledge expected of a graduate with a biology degree. This allows students to develop their own wide-ranging interests in organismal biology. Decisions on what to study are made with input from personal tutors.

The research ethos is developed and fostered from the start via practicals, which are either embedded in lecture modules or taught in dedicated practical modules, research seminars and tutorials. There is a compulsory field course in Level 1, which students must pass in order to progress into Level 2, and optional field courses in Levels 2, 3 and 4. At Level 4 all students carry out an independent research project, which may be a xx credit library or data analysis project, or a xx credit field or laboratory based project.

Academic tutorials are held at Levels 1 and 2 with the same tutor, who is also the personal tutor, providing continuity and progressive guidance. Level 1 and 2 tutorials include a number of workshops to teach skills, e.g. library use and presentation skills, followed by assessed exercises, e.g. essays and talks, as opportunities to practice these skills in a subject-specific context.

International years and Industrial placements are also offered and individual needs are discussed with the appropriate tutor and accommodated wherever possible.

3. Program Objectives

1. Developing the ability to innovate and support scientific entrepreneurship

The Department of Biology seeks to enhance students' skills in creative thinking and solving problems in unconventional ways by studying biological sciences in a comprehensive manner and their applications and uses in society from a theoretical, scientific, and applied perspective. Preparing scientific cadres at the primary and higher levels to work in the medical, health, agricultural, food, oil, and pharmaceutical industries and biological branches. The department also aims to provide an educational environment that encourages the presentation of new ideas and the acquisition of scientific techniques by its students in the use of devices and equipment that can be used in their theoretical and applied studies and provide them with academic and applied information about biological sciences and their various trends and specializations, and research and study everything new in biological sciences and keep pace with scientific developments in this field and include them in the prescribed curricula. It also contributes to building a generation capable of providing innovative solutions to scientific and social problems. In addition to encouraging students to transform their research ideas into commercial projects by providing business incubators and supporting modern technologies.

2. Linking theory to application and providing institutions with qualified graduates

The Department of Biology considers that combining theoretical and practical aspects is essential for understanding scientific concepts. Therefore, this goal is enhanced by increasing the number of partnerships with industrial and research institutions, which provides students with the necessary practical training opportunities and provides state institutions and the mixed and private sectors (medical, industrial, and laboratory institutions) with primary and specialized senior cadres to work in this field to contribute to economic and social development.

3. mproving the quality of scientific research and developing graduate programs

Scientific research is the axis of progress in any field. Therefore, the Department of Biology works to teach students how to design experiments, analyze results, research and study everything new in biological sciences, keep pace with scientific developments in this field, and include them in the prescribed curricula, and contribute to building a generation capable of providing innovative solutions to scientific and social problems. In addition to encouraging students to transform their research ideas into commercial projects by providing business incubators and supporting modern technologies in modern fields such as sustainable development, bioprocessing, and all medical, health, agricultural, food, oil, pharmaceutical, and biological fields.

4. Enhancing creative communication skills and promoting environmental sustainability

Effective communication skills are a key element for scientists to communicate their ideas. Therefore, the curricula in the Department of Biology include training courses focused on scientific communication and presentations, which help students express their ideas clearly and effectively. In addition to incorporating sustainability concepts into the curricula, and encouraging research that supports the environment and sustainable practices, to ensure the environment for future generations.

5. Enhancing ethical awareness and preparing a generation of scientists committed to the highest standards

The Department of Biology seeks to promote the values of scientific ethics, as workshops are organized on scientific ethics and case studies, which illustrate the importance of adhering to these principles during academic and scientific activities. Students' commitment to ethical and professional standards is essential to ensure their ability to contribute to scientific progress responsibly.

6. Encouraging effective teamwork and promoting international cooperation

Teamwork is essential in the academic environment. Therefore, professors in the Department of Biology design group projects as part of the curricula to enhance the skills of cooperation among students and achieve common goals effectively. In addition to establishing partnerships with other universities to exchange experiences and scientific research, which contributes to updating curricula and enhancing the quality of education.

7. Introducing Artificial Intelligence and Nanotechnology

Integrating the fields of artificial intelligence and nanotechnology into the curricula ensures that students are aware of the latest scientific developments in the fields of molecular diagnostics, nanotechnology, and the use and analysis of digital data. Sub-specializations or elective courses can be created that focus on these modern technologies.

4. Student Learning Outcomes

Students with a Bachelor's degree in biology are expected to have acquired the following skills:
1- Ability to Identify Scientific Problems: Students are able to identify, define, and clearly formulate various scientific problems, using appropriate scientific concepts.
2- Application of Scientific Knowledge: Students are able to apply scientific principles to solve field problems and demonstrate the ability to provide effective solutions that meet community needs.
3- Conducting Scientific Experiments: Students acquire the skills to design and conduct scientific experiments with quality assurance, and are able to accurately analyze and interpret results.
4- Effective Communication Skills: Students are able to communicate fluently and effectively, both orally and in writing, with various groups and administrative levels.
5- Ethical and Professional Awareness: Students possess a deep understanding of ethical and professional responsibilities and demonstrate a clear commitment to society in all their scientific activities.
6- Teamwork: Students are able to work effectively within scientific teams, with the ability to define common goals, plan activities, and manage risks.
7- Keeping Up with Technological Developments: Students acquire the skills necessary to keep pace with developments in modern technologies, enabling them to effectively use technological tools in their fields.

5. Academic Staff:

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6. Credits, Grading and GPA

Credits

Mosul 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 required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				
Number 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 total ECTS.

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

   CGPA = [(1st ^{m}odule score x ECTS) + (2nd ^{m}odule score x ECTS) + ……] / 2

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio-1101	General Zoology	108	92	200	8.00	C	
Bio-1102	Analytical Chemistry	108	92	200	8.00	C	
Sci-101	General Mathematics	33	17	50	2.00	B	
Bio-1103	Biophysics	108	92	200	8.00	c	
UOM104	Democracy and Human Rights	33	17	50	2.00	B	
UOM101	Arabic Language	45	5	50	2.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio-1204	General Botany	108	92	200	8.00	C	
Bio-1205	Organic Chemistry	108	92	200	8.00	C	
Bio-1206	Biostatistics	63	62	125	5.00	c	
Bio-1207	Safety and bioscurity	63	37	100	4.00	c	
UOM103	Computer Science	63	12	75	3.00	B	
UOM102	English Language	45	5	50	2.00	B	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio-2308	Entomology I	78	47	125	5.00	C	
Bio-2309	Plant Anatomy	78	47	125	5.00	C	
Bio-23010	Invertebrates	79	71	150	6.00	C	
Bio-23011	Biochemistry I	78	47	125	5.00	C	
Bio-23012	Microbiology I	78	47	125	5.00	C	
UOM2050	Crimes of the Baath party	33	17	50	2.00	B	
UOM2012	Arabic Language 2	33	17	50	2.00	B	UOM101

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio-24113	Entomology II	78	22	100	4.00	C	Bio-2308
Bio-24114	Plant Taxonomy	78	22	100	4.00	C	Bio-2309
Bio-24115	Parasitology	78	22	100	4.00	C	Bio-23010
Bio-24116	Biochemistry II	78	22	100	4.00	C	Bio-23011
Bio-24117	Microbiology II	78	47	125	5.00	C	Bio-23012
Bio-24018	Plant Groups	78	22	100	4.00	C	
UOM2032	Computer Science2	63	12	75	3.00	B	UOM103
UOM2022	English Language 2	33	17	50	2.00	B	UOM102

Semester 5 Five/BIOLOGY | 30 ECTS | 1 ECTS = 25 hrs Five/BIOLOGY

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio1-35019	Cell Biology	78	47	125	5.00	C	
Bio1-35020	Ecology	78	47	125	5.00	C	
Bio1-35021	Biotechnology	78	47	125	5.00	C	
Bio1-35022	Mycology I	78	47	125	5.00	C	
Bio1-35023-L Bio1-35023-A	Elective (Laboratory analysis + Applied and Economic Entomology)	78	47	125	5.00	C	
Bio1-35024	Mycotoxins	78	47	125	5.00	C	

Semester 6 Six/BIOLOGY | 30 ECTS | 1 ECTS = 25 hrs Six/BIOLOGY

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio1-36025	Plant Pathology	78	72	150	6.00	C	
Bio1-36026	Histology	78	72	150	6.00	C	
Bio1-36027-D Bio1-36027-E	Elective (Diagnostic parasite + Endocrinology)	78	72	150	6.00	C	
Bio1-36128	Pollution	64	36	100	4.00	C	Bio1-35020
Bio1-36129	Genetics	78	47	125	5.00	C	Bio1-35019
Bio1-36030	Allelopathy	63	12	75	3.00	C	

Semester 5 Five/Microbiology| 30 ECTS | 1 ECTS = 25 hrs five/Microbiology

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio2-35019	Soil Microbiology	78	47	125	5.00	C	
Bio2-35020-L Bio2-35020-C	Elective (Laboratory Analysis + Diagnostic parasite)	78	47	125	5.00	C	
Bio2-35021	Histology	78	47	125	5.00	C	
Bio2-35022	Ecology	78	47	125	5.00	C	
Bio2-35023	Cell Biology	78	47	125	5.00	C	
Bio2-35024	Classification and Bacterial groups	78	47	125	5.00	C	

Semester 6 Six/Microbiology| 30 ECTS | 1 ECTS = 25 hrs Six/Microbiology

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio2-36025	Water Microbiology	78	47	125	5.00	C	
Bio2-36026	Bacterial Physiology	78	47	125	5.00	C	
Bio2-36027	Animal Physiology	78	47	125	5.00	C	
Bio2-36128	Pollution	78	47	125	5.00	C	Bio2-35022
Bio2-36129	Genetics	78	47	125	5.00	C	Bio2-35023
Bio2-36030-A Bio2-36030-C	Elective (Antibiotics + |Mycotoxins)	78	47	125	5.00	C	

Semester 7 Seven/BIOLOGY| 30 ECTS | 1 ECTS = 25 hrs Seven /BIOLOGY

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio1-47031	Animal Physiology 1	79	71	150	6.00	C	
Bio1-47032	Plant Physiology 1	78	47	125	5.00	C	
Bio1-47033	Embryology	79	71	150	6.00	C	
Bio1-47034	Quantitative Genetics	79	71	150	6.00	C	
Bio1-47035	Molecular biology	78	47	125	5.00	C	
Bio1-47036	Research Methodology	33	17	50	2.00	C	

Semester 8 Eight/BIOLOGY| 30 ECTS | 1 ECTS = 25 hrs Eight /BIOLOGY

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio1-48137	Animal Physiology 2	79	71	150	6.00	C	Bio1-47031
Bio1-48138	Plant Physiology 2	79	71	150	6.00	C	Bio1-47032
Bio1-48039	Comparative Anatomy	79	71	150	6.00	C	
Bio1-48040	Biodiversity	79	71	150	6.00	C	
Bio1-48041	Immunology	78	22	100	4.00	C	
Bio1-48142	Research Project	33	17	50	2.00	C	Bio1-47036

Semester 7 Seven/MICROBIOLOGY| 30 ECTS | 1 ECTS = 25 hrs Seven /Microbiology

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio2-47031	Immunology	79	71	150	6.00	C	
Bio2-47032	pathogenic Bacteriology	79	71	150	6.00	C	
Bio2-47033	Food Microbiology	78	47	125	5.00	C	
Bio2-47034	Mycology	78	47	125	5.00	C	
Bio2-47035	Enzymology	79	71	150	6.00	C	
Bio2-47036	Research Methodology	33	17	50	2.00	C	

Semester 8 Eight/MICROBIOLOGY| 30 ECTS | 1 ECTS = 25 hrs Eight/Microbiology

Code	Module	SSWL	USSWL	SWL	ECTS	Type	Pre-request
Bio2-48037	Microbial Genetics	79	71	150	6.00	C	
Bio2-48038	Virology	79	71	150	6.00	C	
Bio2-48139	Industrial Microbiology	79	71	150	6.00	C	Bio2-47033
Bio2-48140	Fungal Taxonomy	78	47	125	5.00	C	Bio2-47034
Bio2-48041	Molecular biology	78	47	125	5.00	C	
Bio2-48142	Research Project	33	17	50	2.00	C	Bio2-47036

8. Contact

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