University of Anbar

جامعة الانبار

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

بكالوريوس علوم - علم التقنيات الاحيائية

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1. Mission & Vision Statement

Vision Statement

Faculty members in biotechnology at the College of Science at the University of Anbar believe that students are introduced to the specialty of biotechnology through a combination of training courses, laboratory experiments, research and field work. The combination of didactic methods leads students to a balanced understanding of the scientific methods biotechnologists use to make observations, develop ideas, and create theories about biotechnologies used in many areas of life. Small class sizes within the biotechnology program foster a close working relationship between faculty and students in an informal and nurturing atmosphere**.**

Mission Statement

Biotechnology faculty members are pursuing a multifaceted mission at the University of Anbar. The program seeks to provide all biotechnology students with a basic knowledge of biotechnology, as well as a deeper understanding of the chosen focus area in biotechnology. Curriculum and counseling are designed to prepare graduates for their future careers, whether they choose to work as field biotechnologists specializing in red, green, yellow, etc. biotechnology. Or to pursue advanced degrees in biotechnology sciences in general. The Biotechnology program also provides the basic knowledge needed for biotechnology sciences to support multiple fields including medicine, environmental, industrial, and agricultural studies. In addition, biotechnology courses provide essential laboratory science experience for students seeking to complete general education requirements.

Program Specification .2

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

Biotechnology is a wonderfully broad subject and well prepared for its presentation. The focus of the program is on biotechnologies in all its branches, whether red biotechnologies. bile. green, black, etc. The degree is popular - for some it is the breadth of the subject that attracts, for others it is a path to specialisation. All students have the opportunity to transfer to our specialized degrees in genetics, zoology, microbiology (industrial or medical), environment and agriculture.

Level 1 introduces students to the fundamentals of biotechnology and is suitable for progression in all programs within the Biotechnology suite of programmes. Program-specific core topics are covered at Level 2 to prepare for the research-led specialist modules at Levels 3 and 4. The University Biotechnology graduate is thus trained to appreciate how research informs teaching, in accordance with the mission statements of the University and the School.

At Levels 2, 3 and 4, students are free to choose more than half of their unit credits provided they choose a range of units that reflect the complexity of life forms from molecules, through organisms, plants and animals alike, to populations to ensure the expected breadth of knowledge Graduated with a degree in Biotechnology. This allows students to develop their broad interests in biotechnology. Decisions about what to study are made with input from personal tutors.

The research ethos is developed and fostered from the start via practical, 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. To provide a comprehensive education in biotechnology that stresses scientific reasoning and problem solving across the spectrum of disciplines within biotechnology

2. To prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry level jobs in any area of biotechnology

3. To provide extensive hands-on training in biotechnology, statistical analysis, laboratory skills, and field techniques

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 biotechnology through undergraduate research, internships, and study-abroad

4. Student Learning Outcomes

Biotechnology is the study of the organization and operation of life at the molecular, cellular, organism, microorganisms, and population levels. Graduates obtain information on the historical, technical and social aspects of Biotechnology and utilize basic knowledge toward realizing broader concepts. The Department offers a Bachelor of Science in Biotechnology with a concentration in General Biotechnology; Pre-medicine / Pre-dentistry; Biotechnology / Molecular Biology and a minor in Secondary Education that leads to a Public Instruction License. Additionally, the Department offers courses to a large number of students from other departments and supports pre-professional programs. The Biotechnology curriculum and experiences are designed to prepare students, in part, for entry into professional health programs, graduate studies, technical careers and education

Outcome 1

Identification of Complex Relationships

Graduates will be able to illustrate the structure and function of cellular components and explain how they interact in a living cell.

Outcome 2

Oral and Written Communication

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

Outcome 3

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 4

Scientific Knowledge

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 science.

Outcome 5

Data Analyses

Graduates will be able to demonstrate scientific quantitative skills, such as the ability to conduct simple data analyses.

Outcome 6

Critical Thinking

Graduates will be able to use critical-thinking and problem-solving skills to develop a research project and/or paper.

5. Academic Staff

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Credits, Grading and GPA .6

Credits

Anbar 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 ᵐodule score x ECTS) + (2nd ᵐodule score x ECTS) + ……] / 240

Curriculum/Modules .7

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BioT-611	biotechnology1	94	106	8.00	B	
BioT-612	biology (plant)	94	106	8.00	B	
BioT-613	biophysics	64	86	6.00	C	
BioT-614	biostatistic	49	51	4.00	C	
BioT-615	arabic language	62	38	4.00	S	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BioT-621	biotechnology2	94	106	8	B	
BioT-622	biology (animal)	94	106	8	B	

BioT-623	chemistry	64	61	5	C	
BioT-624	computer	32	43	3	C	
BioT-625	english language	47	28	3	S	
BioT-626	freedom and democracy	47	28	3	S	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BioT-631	Biochemistry1	79	96	7	B	
BioT-632	Environmental Biotechnology	79	96	7	B	
BioT-633	Microbiology1	64	111	7	B	
BioT-634	Histological and Microscopic preparation	79	96	7	B	
BioT-635	Biosafety	32	18	2	B	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BioT-641	Biochemistry2	79	71	6	B	
BioT-642	Microbial physiology	64	86	6	b	
BioT-643	Medical microbilogy	79	71	6	B	
BioT-644	General genetics	79	71	6	B	
BioT-645	Biological control	79	71	6	B	

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

BioT-651	Molecular biology	79	71	6	B	
BioT-652	Virology	79	71	6	B	
BioT-653	Animal physilogy	79	71	6	B	
BioT-654	Elective course1	79	71	6	B	
BioT-655	Biochemical techniques	79	71	6	B	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BioT-661	Microbial genetics	79	46	5	B	
BioT-662	Immunology	79	46	5	B	
BioT-663	Mycology	79	46	5	B	
BioT-664	Plant physiology	79	46	5	B	
BioT-665	Elective course2	64	46	5	B	
BioT-666	Fermentation technology	64	46	5	B	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
BioT-671	Animal tissue culture	64	61	5	B	
BioT-672	Genetic engineering and application	79	46	5	B	
BioT-673	Food Microbiology	79	46	5	B	
BioT-674	Graduation research project	79	46	5	B	
BioT-675	Pathogenic bacteria	64	61	5	B	
BioT-676	Elective course1	79	46	5	B	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request

BioT-681	Plant tissue culture	64	86	6	B	
BioT-682	Industrial microbiology	79	71	6	B	
BioT-683	Medical plant	64	86	6	B	
BioT-684	Antibiotics	79	71	6	B	
BioT-685	Elective course2	64	86	6	B	

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