Alkarkh university of sciences

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

بكالوريوس علوم - علوم البيئة

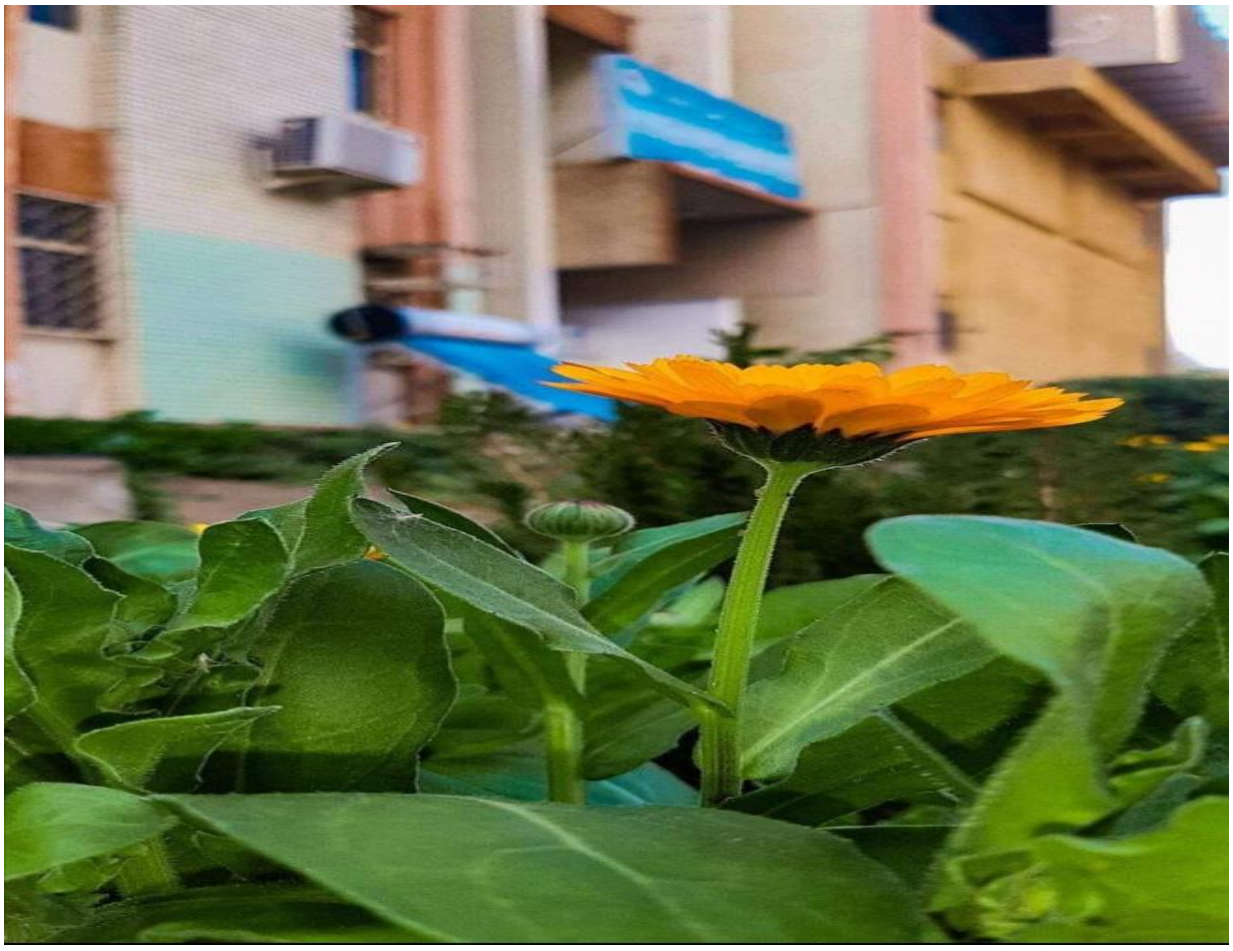

Table of Contents | جدول المحتويات

1. Mission & Vision Statement

Vision Statement

The Environmental Science academic staff at Al-Karkh University of Science believes that students come to understand the discipline of Environment through a combination of coursework, laboratory experiences, research, and fieldwork. The Department of Environmental Science aspires to be the distinguished department among the departments of the other Sciences on the national, Arab and international scale in the fields of theoretical, applied, community service and consultancy. The Environmental Sciences Department is committed to graduating an environmental learner who meets the needs of the local and regional labor market while conducting scientific and applied research and providing community services in various environmental fields.

Mission Statement

The Environmental Science academic staff pursues a multifaceted charge at Al-Karkh University of Science. The Department of Environmental Science seeks to provide the best services to society in the field of the environment by graduating the best specialist in the field of environment that diagnose current and future needs and respond effectively by ensuring quality in all educational, research and consultancy aspects. The Environmental Sciences program is considered by linking issues related to the environment such as water, soil, biodiversity and climate change with modern technology. The graduate student will be able to conduct various environmental tests and expermints by acquiring knowledge of modern technology that deals with the examination of food and agricultural products, water and environmental pollutants. The graduate student can work in different sectors and institutions, such as:

1- Ministry of Environment.

2- Ministry of Water Resources.

3- Ministry of Industry and Minerals.

4- Ministry of Oil.

5- The Ministry of construction and Housing and Public Municipalities.

6- Ministry of Electricity.

8- Ministry of Education.

9- Ministry of Agriculture.

10- Ministry of Commerce.

11- The Governorate Council.

12- Research centers in all ministries.

13- Iraqi universities and research centers in the Ministry of Higher Education and Scientific Research.

14- Ministry of Health

2. Program Specification

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

Environmental science is an interdisciplinary field that integrates physics, biology, and geography (including ecology, chemistry, plant science, zoology, soil science, microbiology and atmospheric science) to the study of the environment, and the solution of environmental problems. Environmental scientists seek to understand the earth's physical, chemical, biological, and geological processes, and to use that knowledge to understand how issues such as alternative energy systems, pollution control and mitigation, natural resource management, and the effects of global warming and climate change influence and affect the natural systems and processes of earth. All students have the opportunity to transfer onto our specialist degrees in environmental sciences at the end of the first year.

Level 1 exposes students to the fundamentals of environmental sciences, suitable for progression to all programs within the ecology program group. Program-specific core topics are covered at Level 2 preparing for research-led subject specialist modules at Levels 3 and 4. 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 their module credits with the condition a range of modules are selected that reflect the complexity of life forms from molecules, through organisms, to populations to ensure the breadth of knowledge expected of a graduate with a environmental degree. This allows students to develop their own wide-ranging interests in ecology. 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 library or data analysis project, or 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.

Scientific visits 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 environmental sciences that stresses scientific reasoning and problem solving across the spectrum of disciplines within ecology.
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 environmental sciences.
3. To provide extensive hands-on training in environmental sciences techniques, 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 environmental sciences through undergraduate research, internships, and study-abroad

4. Student Learning Outcomes

Basic core concepts and methods from ecological and physical sciences and their application in environmental problem solving. Graduates will be able to understand how interactions between organisms and their environments drive the dynamics of individuals populations, communities, and ecosystems.

Outcome 1

Identification of Complex Relationships

Graduates will be able to illustrate the structure and function of ecology system components.

Outcome 2

Oral and Written Communication

Graduates will be able to formally communicate the results of ecological 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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6. Credits, Grading and GPA

Credits

Alkarkh University of sciences 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

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CRE1101	analytic chemistry	64	61	5.00	S	
KUS1102	Mathematics	48	77	5.00	B	
KUS1103	Fundamental of Computer Science	64	36	4.00	B	
CRE1104	physics	64	86	6.00	S	
ENV1105	biology	64	86	6.00	C	
KUS1106	Arabic Language	33	67	4.00	B	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CRE1207	organic chemistry	64	61	5.00	S	
CRE1208	Geology	79	71	6.00	S	
KUS1209	Human Rights	33	42	3.00	B	
ENV12010	ecology	79	71	6.00	C	
ENV12011	pedology	79	71	6.00	C	
KUS12012	English language	33	67	4.00	B	

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ENV23013	princeple renewable energy	63	37	4.00	S	
ENV23014	microbiology	79	71	6.00	C	
ENV23015	climatology	79	71	6.00	C	
ENV23016	environmental sustainability	47	28	3.00	C	
ENV23017	biochemistry	64	61	5.00	C	
ENV23118	soil pollution	79	71	6.00	C	ENV12011

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
CRE24119	climate change	48	77	5.00	S	ENV23015
ENV24020	Aquatic ecology	64	86	6.00	C	
KUS24021	Freedom and democracy	33	42	3.00	B	
ENV24022	environmental chemistry	64	86	6.00	C	
ENV24023	Air pollution	64	86	6.00	C	
ENV24124	microbial ecology	48	52	4.00	C	ENV23014

Semester 5 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ENV35025	water pollution	79	71	6.00	C	
ENV35026	algal ecology	79	71	6.00	C	
ENV35027	molecular biology	79	71	6.00	C	
ENV35028	ecological physicology	48	52	4.00	C	
ENV35029	Environmental toxicology	48	52	4.00	C	
ENV35030	statistical application	48	52	4.00	C	

Semester 6 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ENV36031	remote sensing	64	86	6.00	C	
ENV36032	scientific research methods	32	18	2.00	C	
ENV36033	water treatment	63	62	5.00	C	ENV35025
ENV36134	biodiversity	79	71	6.00	C	ENV35027
ENV36035	Environmental Awareness	79	71	6.00	C	
ENV36036	Elective	63	62	5.00	E	

Semester 7 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ENV47037	environmental legislation and laws	48	27	3.00	C	
ENV47038	environmental impact assessment	63	62	5.00	C	
ENV47039	waste management	79	71	6.00	C	
ENV47040	graduation project	92	83	7.00	C	
ENV47041	Elective	63	87	6.00	E	
KUS47042	Job Ethics	33	42	3.00	B	

Semester 8 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
ENV48043	sustainable development	48	27	3.00	C	
ENV48044	environmental engineering	94	81	7.00	C	
ENV48045	planning and environmental management	48	52	4.00	C	
ENV48046	epidemiology	48	77	5.00	C	
ENV48047	environmental technicals	79	71	6.00	C	
ENV48048	elective	48	77	5.00	E	

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