

**Ministry of Higher Education and Scientific Research
Scientific supervision and evaluation device
Department of Quality Assurance and Academic Accreditation**

Academic program description form for colleges and institutes for the academic year

University: Mosul

College/Institute: College of Engineering

Scientific Department: Department of Environment Engineering

Date of filling the file: 2023

Description of the academic program

This academic program description provides a necessary summary of the most important characteristics of the program and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the available opportunities. It is accompanied by a description of each course within the program.

1. Educational Institution	University of Mosul
2. Scientific department/center	College of Engineering/Department of Environmental Engineering
3. Name of the academic or professional program	Bachelor of Environmental Engineering
4. Name of the final degree	Bachelor of Science in Environmental Engineering
5. Study system: annual/courses/others	Courses
6. Accredited Accreditation Program	National accreditation for engineering education
7. Other external influences	Higher decisions
8. Date the description was prepared	

9.Objectives of the academic program

The department is keen to ensure that the academic programs it adopts are solid and reliable, and the curricula adopted in it are constantly updated to keep pace with the requirements of the challenges of the times and the market, which enhances the intellectual capabilities of the department's graduates and develops their creative side.

Urging all faculty members and students of the department to complete scientific research and highlight its effective role in achieving benefit for society by protecting the environment and solving its real problems.

Continuous development of the department's human resources of faculty members and administrative staff, while providing opportunities for distinguished ones to highlight their talents and make their mark, which reflects positively on the department in particular and on the college in general, in accordance with quality standards and academic and institutional accreditation.

Developing the ethical and professional aspects of both faculty members and the department's administrative staff, while consolidating professional ethics among students and the principles of practical practice, and establishing the principle of teamwork and awareness-raising thought aimed at protecting the environment and serving society.

Maintaining communication with the department's graduates, following them up continuously, and interacting with them in a way that ensures the fulfillment of the department's mission.

Openness towards academic and community institutions and strengthening ties with them through constructive cooperation at all scientific and applied levels in a way that contributes to developing the environment and improving all its facilities.

The department believes in transparency and presenting the positives and negatives to all its members, with the aim of addressing the negatives and supporting the positives. It also pledges to work with integrity, in a way that achieves justice and enhances trust, credibility and institutional accountability.

Appreciating the creative and distinguished people academically or intellectually and urging them to continue and support them continuously.

10.Required program outcomes and teaching, learning and evaluation methods

A. Knowledge goals

1. Principles of basic, applied and engineering sciences necessary for familiarity with the specialty of environmental engineering (such as mathematics, chemistry, physics, geology, computers and its applications).
2. Environmental engineering sciences, such as the sciences concerned with the design, manufacture, operation, and development of liquefaction water plants and networks and sewage treatment plants of various types, in addition to air, water and soil pollution control units and noise control means in order to achieve sustainability goals.
3. Professional foundations and related communication skills, such as presentation and writing reports, with familiarity with economic, legal, and health determinants.

B. Skills objectives of the program

1. Solving and formulating engineering problems in general, especially those related to environmental engineering.
2. Identify and formulate engineering problems and apply mathematical knowledge, science, engineering methods, and creativity skills to solve problems in the field of environmental engineering.
3. Preparing technical and operational specifications for environmental engineering projects

Teaching and learning methods

Theoretical lectures
Discussion sessions
Laboratory experiments
Computer laboratories
Distance Learning

Evaluation methods

Mid-term and final exams
Quizzes
Homework
Reports
Practical exams
diction

C. Thinking skills

1. Conducting and designing practical experiments for water, air and soil pollution treatment systems, in addition to analyzing and interpreting the practical results related to them.
2. Writing computer programs and using ready-made programs to solve problems related to the field of specialization.
3. Apply modern engineering techniques, skills and tools and intelligent control of processing systems

Teaching and learning methods

Theoretical lectures
Discussion sessions
Laboratory experiments
Computer laboratories
Projects
summer training

Evaluation methods

Semester and final exams
Quizzes
Reports
Practical exams

D. Transferable general and qualifying skills (other skills related to employability and personal development)

1. Work professionally and with ethical responsibility, individually or within a multidisciplinary team.
2. Writing technical reports and presenting effectively.
3. Effective use of information technology related to engineering applications in general and the field of environmental engineering in particular.
4. The possibility of starting scientific research projects in the future.

Teaching and learning methods

Theoretical lectures
Discussion sessions
Laboratory experiments
Computer laboratories
Projects
summer training

Evaluation methods

Semester and final exams
Quizzes
Reports
Practical exams

11. Planning for personal development
Student development, the teacher's program for student development, such as using the Internet, using IT, using safety methods in the laboratory, and developing the student's academic personality capable of competition, dialogue, and problem solving
12. Admission standard (establishing regulations related to college admission)
<ol style="list-style-type: none"> 1. Central distribution by the Ministry of Higher Education determines those accepted into the College of Engineering. 2. The choices of those accepted into the departments are determined, and competition takes place between them on the basis of the total - then the total of the differentiation lessons. 3. Transfer from other departments and universities is accepted in accordance with higher controls and instructions
13. The most important sources of information about the program
<p>Developing the program through resources</p> <p>Higher directives</p> <p>What is emerging from the science in the field of specialization</p>

14. Department vision, mission and goals
<p>Department vision Leadership and excellence in environmental engineering in education, research and application</p> <p>Department mission Consolidating the role of environmental engineering in society, raising the level of graduates, developing their abilities to compete in the labor market with high professionalism, and employing them to achieve comprehensive and sustainable development.</p> <p>Department Goals</p> <ol style="list-style-type: none"> 1. The department is keen to ensure that the academic programs it adopts are solid and reliable, and that the curricula adopted in it are constantly updated to keep pace with the requirements of the challenges of the times and the labor market, which enhances the intellectual capabilities of the department's graduates and develops their creative side. 2. Urging all faculty members and students of the department to complete scientific research and highlight its effective role in achieving benefit for society by protecting the environment and solving its real problems. 3. Continuous development of the department's human resources of faculty members and administrative staff, while providing opportunities for distinguished ones to highlight their

talents and make their mark, which reflects positively on the department in particular and on the college in general, in accordance with quality standards and academic and institutional accreditation.

4. Developing the ethical and professional aspects of both faculty members and the department's administrative staff, while consolidating professional ethics among students and the principles of practical practice thereof, and establishing the principle of teamwork and awareness-raising thought aimed at protecting the environment and serving society.

5. Maintaining communication with the department's graduates, following them up continuously, and interacting with them in a way that ensures the fulfillment of the department's mission.

6. Openness towards academic and community institutions and strengthening bonds with them through constructive and fruitful cooperation at all scientific and applied levels in a way that contributes to developing the environment and improving all its facilities.

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8. Appreciating the creative and distinguished people academically or intellectually and urging them to continue and support them continuously.

15. Program structure

Courses / College of Engineering / University of Mosul**First academic level****Environmental Engineering Department**

First academic level (Fall semester)								
Requirement name	Course type	Course name	Theoretical hrs.	Practical hrs.	Unit No.	Prerequisite	Course Code	Notes
University requirements	Required	Arabic Language	2	0	2		UOMC100	
	Required	Computer	2	2	3		UOMC102	
	Required	Human Rights & Freedom	2	0	2		UOMC103	
College requirements	Required	Calculus 1	2	2	3		ENGC121	
	Required	Engineering Drawing	0	3	1		ENGC123	
	Required	Electrical Engineering	0	2	2		ENGE131	
	Required	General Chemistry	0	2	2		ENGE134	
Department requirements	Required	Static Mechanic	3	0	3		ENVC140	
	Required	Programing	1	2	2		ENVC141	
Total hours and units of the first semester			19	5	21			

First academic level (Spring semester)

Requirement name	Course type	Course name	Theoretical hrs.	Practical hrs.	Unit No.	Prerequisite	Course Code	Notes
University requirements	Required	English Intermediate	2	0	2		UOMC101	
	Required	Professional ethics	2	0	2		UOMC104	
	Elective	Information technology	2	0	2		UOME	
College requirements	Required	Math 2	3	0	3	Calculus 1	ENGC122	
	Required	AutoCAD	2	2	2	Engineering Drawing	ENGC124	
	Elective	Physics	2	0	2		ENGE133	
Department requirements	Required	Dynamic mechanic	2	0	2	Static Mechanic	ENVC142	
	Required	Environmental geology	2	0	2		ENVC143	
	Required	Environmental thermodynamic	2	0	2		ENVC144	
Total hours and units of the second semester			19	2	19			

Courses / College of Engineering / University of Mosul

Second academic level

Environmental Engineering Department

Second academic level (Fall semester)								
Requirement name	Course type	Course name	Theoretical hrs.	Practical hrs.	Unit No.	Prerequisite	Course Code	Notes
University requirements	Required	English Language – Pre Intermediate	1	0	1		UOMC	
College requirements	Required	Statistics	2	0	2		ENGC227	
Department requirements	Required	Engineering mathematics	4	0	4	Math 2	ENV240	
	Required	Engineering surveying	4	3	5	Math 2	ENV241	
	Required	Principles of Environmental engineering	2	0	2	General Chemistry	ENV242	
	Required	Strength of materials	3	0	3	Static Mechanic	ENV243	
	Required	Construction materials	1	2	2		ENV244	
	Required	Environmental remote sensing	2	0	2		ENV245	
Total hours and units of the first semester			19	5	21			

Second academic level (Spring semester)

Requirement name	Course type	Course name	Theoretical hrs.	Practical hrs.	Unit No.	Prerequisite	Course Code	Notes
University requirements	Elective	Electrical installation	2	0	2			
	Required	Manufacturing processing	2	0	2			
Department requirements	Required	Engineering analysis	2	0	2	Engineering mathematics	ENV246	
	Required	Fluids mechanic	3	2	4	Dynamic mechanic	ENV247	
	Required	Water quality engineering	2	2	3	Principles of Environmental engineering	ENV248	
	Required	GIS application	1	2	2	Engineering surveying	ENV249	
	Required	Buildings construction	2	0	2	Construction materials	ENV250	
	Required	Hydrology	3	0	3	Statistics	ENV251	
	Required	Microbiology	2	2	3		ENV252	
Total hours and units of the first semester			8	21	21			

Courses / College of Engineering / University of Mosul

Second academic level

Environmental Engineering Department

Third academic level (Fall semester)								
Requirement name	Course type	Course name	Theoretical hrs.	Practical hrs.	Unit No.	Prerequisite	Course Code	Notes
College requirements	Required	Public safety	2	0	2		ENG 329	
	Elective	Numerical Analysis	2	0	2		ENG 320	
Department requirements	Required	Water supply	3	0	3	Fluids mechanic	ENV340	
	Required	Hydraulic application	3	0	3	Fluids mechanic	ENV341	
	Required	Soil mechanic	3	2	4	Fluids mechanic, Static Mechanic, Environmental thermodynamic	ENV342	
	Required	Air pollution	3	0	3	Fluids mechanic	ENV343	
	Required	Waste water	2	0	2	Water quality engineering, General Chemistry	ENV344	
	Required	Engineering research	2	0	2		ENV345	
Total hours and units of the first semester			20	21	21			

Third academic level (Spring semester)								
Requirement name	Course type	Course name	Theoretical hrs.	Practical hrs.	Unit No.	Prerequisite	Course Code	Notes
University requirements	Required	English Language - Intermediate	2	0	2		UOMC	
	Required	Sanitary sewer networks	3	0	3	Fluids mechanic	ENV346	
Department requirements	Required	Foundation Engineering	3	0	3	Soil mechanic	ENV347	
	Required	Water chemistry	3	0	3	Fluids mechanic Environmental geology	ENV348	
	Required	Reinforcement concrete	3	0	3	Strength of materials	ENV349	
	Required	Solid waste	4	0	4	Principles of Environmental engineering	ENV350	
	Elective	Noise pollution	2	0	2		ENV390	
	Elective	Thermal pollution	2	0	2	Environmental thermodynamic	ENV391	
	Total hours and units of the first semester			20	0	20		

Note: The student is required to complete the summer training after the end of the second semester of the third level

Courses / College of Engineering / University of Mosul

Forth academic level

Environmental Engineering Department

Forth academic level (Fall semester)								
Requirement name	Course type	Course name	Theoretical hrs.	Practical hrs.	Unit No.	Prerequisite	Course Code	Notes
College requirements	Required	Engineering management	2		2		ENG 425	
	elective	Environmental engineering and Sustainable	2		2		ENG436	
Department requirements	Required	Drinking water treatment	4	Water quality water supply, hydraulic application	4		ENV440	
	Required	Wastewater treatment design	4	Sanitary sewer networks ,hydraulic application	4		ENV441	
	Required	Environmental construction design	3	Reinforced concrete , foundation engineering	3		ENV442	
	Required	Air pollution control	3	Air pollution	3		ENV443	
	Required	Engineering Project_1	2		2		ENV444	
Total hours and units of the first semester			20	0	20			

Forth academic level (Spring semester)

Requirement name	Course type	Course name	Theoretical hrs.	Practical hrs.	Unit No.	Prerequisite	Course Code	Notes
University requirements	Required	English language-advance	2	0	2		UOM	
College requirements	Required	Engineering economic	3	0	2	Engineering management	ENG426	
Department requirements	Required	Industrial and hazardous wastewater	3	0	4	Wastewater treatment design	ENV445	
	Required	Soil and ground water pollution	3	0	3	Water quality, hydrology	ENV446	
	Required	Construction drawing	3	0	2	Reinforced concrete, engineering drawing	ENV447	
	Required	Estimation	4	0	2		ENV448	
	Required	Engineering Project_2	2	0	2		ENV449	
	elective	Advance water supply	2	0	2	Drinking water treatment	ENV490	
	elective		2	0	2	Wastewater treatment design	ENV491	
Total hours and units of the first semester			19	0	19			

Skills chart																	
Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation																	
				Learning outcomes required from the program													
				Knowledge and understanding			subject-specific skills				thinking skills, general and qualifying skills transferred			Other skills related to) employability and (personal development			
level	Course code	Course name	R. or E.	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3	D4
Third	ENG 329	English Language – Pre Intermediate	R.	*	*										*		
	ENG 320	Statistics	E.	*								*		*	*		
	ENV340	Engineering mathematics	R.	*	*		*										
	ENV341	Engineering surveying	R.	*	*		*										
	ENV342	Principles of Environmental engineering	R.	*	*		*										
	ENV343	Strength of materials	R.	*						*							
	ENV344	Construction materials	R.	*						*	*				*		
	ENV345	Environmental remote sensing	R.	*	*		*										
	UOMC	English Language - Intermediate	R.				*										
	ENV346	Sanitary sewer networks	R.	*	*							*			*		
	ENV347	Foundation Engineering	R.	*										*	*		
	ENV348	Water chemistry	R.	*	*		*										
	ENV349	Reinforcement concrete	R.	*	*		*										
	ENV350	Solid waste	R.	*	*		*										
	ENV390	Noise pollution	E	*							*						
ENV391	Thermal pollution	E.	*							*	*			*			

Skills chart

Please check the boxes corresponding to the individual learning outcomes from the program subject to evaluation

Learning outcomes required from the program																		
				Knowledge and understanding				subject-specific skills				thinking skills, general and qualifying skills transferred			Other skills related to) employability and (personal development			
level	Course code	Course name	R. or E.	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	D1	D2	D3	D4	
Forth	ENG 425	Engineering management	R.	*	*		*											
	ENG436	Environmental engineering and Sustainable	E.	*	*		*			*								
	ENV440	Drinking water treatment	R.	*	*		*	*										
	ENV441	Wastewater treatment design	R.	*	*									*			*	
	ENV442	Environmental construction design	R.	*	*		*			*		*						
	ENV443	Air pollution control	R.	*	*		*			*								
	ENV444	Engineering Project_1	R.	*	*		*				*							
	UOM	English language-advance	R.	*						*								
	ENG426	Engineering economic	R.	*	*		*											
	ENV445	Industrial and hazardous wastewater	R.	*	*		*											
	ENV446	Soil and ground water pollution	R.	*	*		*			*								
	ENV447	Construction drawing	R.	*	*		*	*										
	ENV448	Estimation	R.	*	*										*		*	
	ENV449	Engineering Project_2	R.	*	*		*			*		*						
	ENV490	Advance water supply	E	*	*		*			*								
ENV491	Advance wastewater treatment	E.	*	*		*				*								