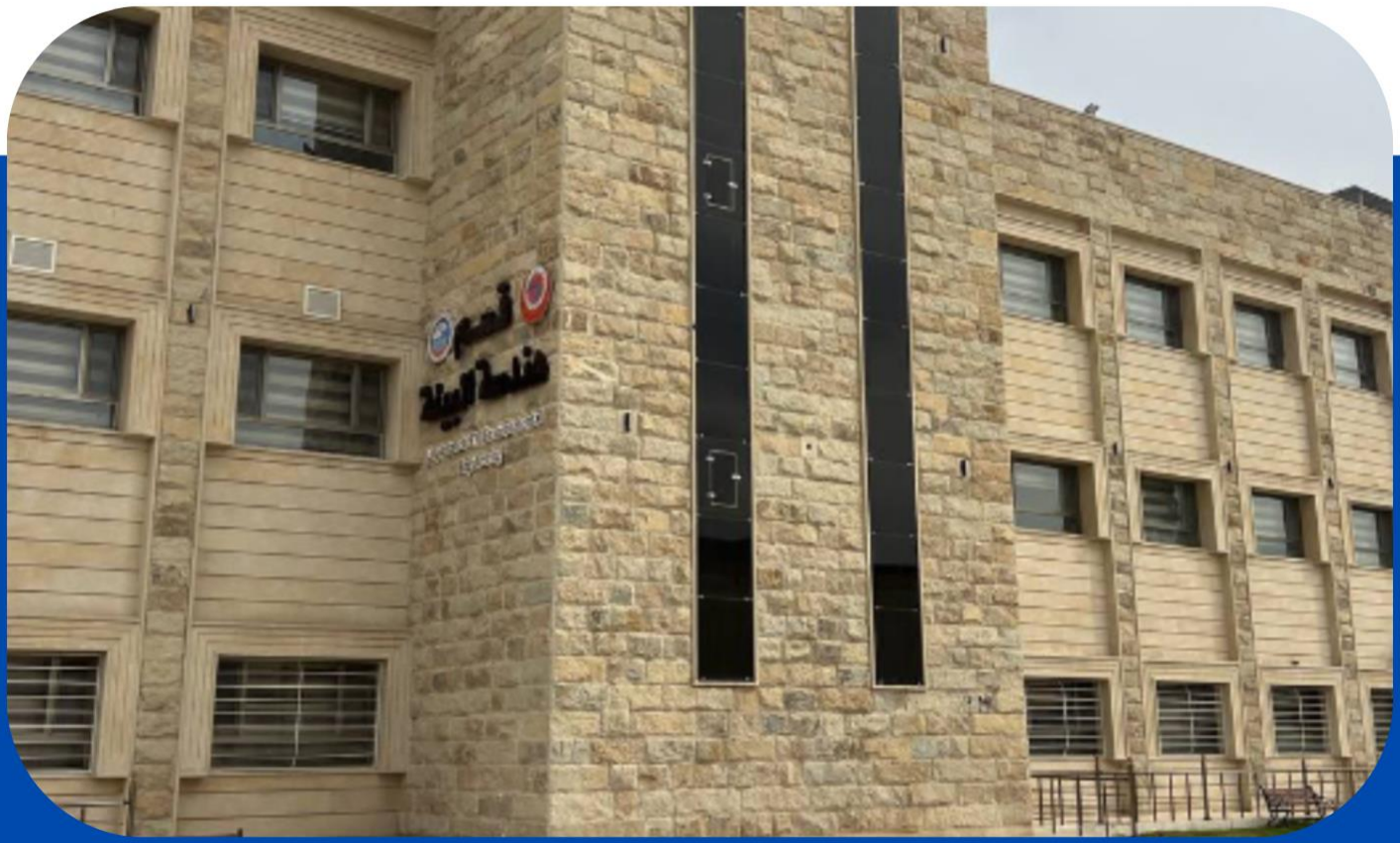
University of Mosul
College of Engineering

Guide of Department of Environmental Engineering



2025 Edition

9 الصناعة والابتكار والبنية التحتية

Uomosul.edu.iq/engineering/ Iraq-Mosul-Al Majmoaa Street

College of Engineering

Prof. Dr. Adul-Rahim Ibrahim Jasim
Dean of College of Engineering

Dr. Bisam Ehessan Al-Hafiz
Assistant Dean for Administrative Affairs

Asst.Prof. Dr. Ayman Talib Hameed
Assistant Dean for Scientific Affairs

Prof. Dr. Moataz A. Al-Obaydi
Head of Civil Engineering Department

Asst. Prof. Dr. Mohammad Tariq Yaseen
Head of Electrical Engineering Department

Asst. Prof. Omar Mohammad Hamdoon
Head of Mechanical Engineering Department

Asst. Prof. Dr. Omar Miqdad Abdulghani
Head of Dams and Water Resources Engineering Department

Asst. Prof. Dr. Omar Hazim Ahmed Kharofa
Head of of Architecture Engineering Department

Prof. Dr. Salah Abdulghani Alabady
Head of Computer Engineering Department

Asst. Prof. Dr. Aws Hazim Saber
Head of Mechatronics Engineering Department

Asst. Prof. Dr. Abdullah Ismail Ibrahim
Head of Environmental Engineering Department

Lecturer Dr. Younis Mahal Najm
Head of Sustainable Energy Engineering Department

Introduction

The idea of establishing the Department of Environmental Engineering began by teaching environmental engineering subjects and opening the Environmental Engineering Laboratory in 1971 in the Department of Civil Engineering - College of Engineering, With the aim of providing civil engineers with environmental expertise and scientific and practical applications in order to cooperate in creating a clean engineering environment.

The Environmental Engineering Branch was created within the specializations of the Civil Engineering branches in the year (1997) and engineers graduated from it with civil and environmental engineering information, Postgraduate studies in this specialty began early with the granting of a master's degree and then a doctorate in various environmental engineering topics. On August 2011, the Department of Environmental Engineering was launched as an independent department among the departments of the College of Engineering. This department includes a specialized scientific staff capable of achieving its goals for which it was established and graduating engineers capable of understanding the environmental reality in Iraq.

This guide is available in Arabic and English language and it is prepared under the directions of the Dean of the College of Engineering Prof. Dr. AbdulRahim Ibrahim Jassim, under the supervision of the Head of the Environmental Engineering Department, assistant prof. Dr. Abdullah Ismael Ibrahem.

2024-2025

Department Management

Assistant prof. Dr. Abdullah Ismael Ibrahem

- Head of Environmental Engineering Department
- Spcialty: Environmental Engineering

Lect. Hanan Haqi Ismael

- Department Coordinator
- Specialty: Environmental Engineering

Department Laboratories

Environmental Laboratory

- **Laboratory Supervisor: Lect. Dr. Mohammed Salim Shihab**

Engineering Survey Laboratory

- **Laboratory Supervisor: Baker Khairi Hasan**

Computer Laboratory

- **Laboratory Supervisor: Ammar Mohammed Shareef**

Vision:

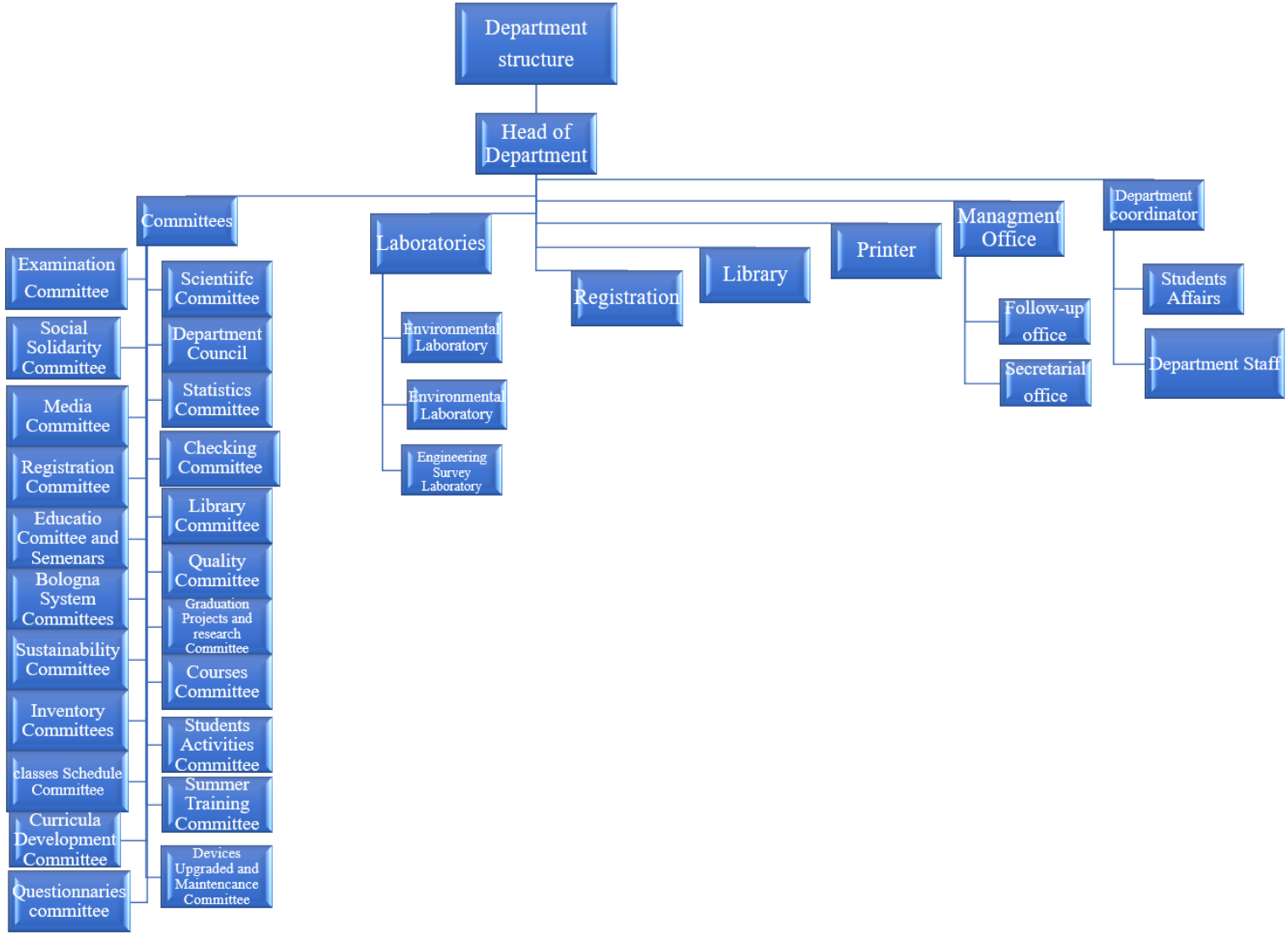
To lead and achieve excellence in teaching, research, and practice in Environmental Engineering.

Mission:

Establish the role of Environmental Engineering in society raise the level of the graduates and develop their abilities to compute in the labor market professionally.

Goals:

- Rising the academic program and the curriculum to keep up with the current challenges and the challenges in the labor market and achieve sustainable development goals.
- Continuing development of the faculty and administrative staff and providing the opportunity for the distinguished members to leave their mark and show their talents- which reflects positively on the department and the college according to the quality standards and institutional accreditation.
- Growing both ethical and professional sides for the faculty and administrative staff and establishing the work ethics for students and its practice. Also, encouraging teamwork spirit and awareness to protect the environment and serve society.
- Keeping the connection with the department alumni and actively following up with them to ensure the fulfillment of the department goals.
- Opening to other academic and community establishments and strengthening the connections through building positive and fruitful cooperation on scientific and practical levels to improve the environment and all its elements.
- Valuing talented and distinguished personnel- scientifically and intellectually- and encouraging them and supporting them.


Department structure
Head of Department
Committees
Examination Committee
Social Solidarity Committee
Media Committee
Registration Committee
Educatio Comittee and Semenars
Bologna System Committees
Sustainability Committee
Inventory Committees
classes Schedule Committee
Curricula Development Committee
Questionnaries committee
Scientiifc Committee
Department Council
Statistics Committee
Checking Committee
Library Committee
Quality Committee
Graduation Projects and research Committee
Courses Committee
Students Activities Committee
Summer Training Committee
Devices Upgraded and Maintencance Committee
Laboratories
Environmental Laboratory
Environmental Laboratory
Engineering Survey Laboratory
Registration
Library
Printer
Managment Office
Follow-up office
Secretarial office
Department coordinator
Students Affairs
Department Staff

Responsibilities

Head of Department: Managing the department in scientific, administrative, cultural, educational, financial, and students' affairs. Supervised on educational techniques and process, prepare a seasonally and annually reports on departments activities and raise it to the dean of the college. Distributing the duties on the department faculty and staff and issued administrative orders to do so. Assign lectures and classes to the department professors.

Department Coordinator: Follow up the student absence and the seminars.

Department Council Committee: Supervision on the department education program. Follow up and achieve the scientific plan and the development of faculty and staff.

Examination Committee: Follow up the mid-term and final exams, organize the observation schedule and observers. Receiving the exam questions and the grades from the faulty and organizing them securely. Prepare statistics to the final grades and provides the pass and fail percentages for examiners, preparing make-up exams.

Auditing Committee: It works simultaneously with the examination committee during exams and results. The committee members check the marks received from the faculty

Continuous Education and Seminars Committee: Following up the continuous education session prepared and presented by department faculty for engineering who are working industrials. Additionally, following up the conferences and seminars prepared by the department.

Summer Training Committee: Prepare official letter specifically for junior students to admit them to be trained at the industrials. monitoring the students during training. Receiving reports prepared by students after they completed their training.

Media Committee: The committee members report all scientific and social activities via that the department make them frequently. They are usually done via photos and posters.

Free Education Committee: Distributing books to students at the beginning of each academic year and receive them at the end of the academic year. Organizing a list for borrowed books by faculty and graduate students.

Classes Schedule Committee: The committee members prepare classes schedule for undergraduate and post graduate programs.

Inventory Committee: An inventory for the furniture and equipment available at the department rooms and laboratories

Department Management: Reporting incoming official letters, sending out the official letter released from the head of department. Issued the official letters, and organization of issued and received official letters.

Printer: Typing, Printing, and reporting the official letter and reporting the student's daily attendance. Prepare a monthly table for the percent of student absence. Receiving and sending emails from and to the department management.

Library: Organize the work for borrowing books and theses and dissertations. Additionally, organize the Engineering software's CDs

Department Staff

No.	Name	The academic title	Email
1	Dr.Abdullah Ismail Ibrahem	Assist. Prof.	abdullah.ibrahim@uomosul.edu.iq
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Department Building

The department building is within the main campus of the University of Mosul and lies 200 m from the eastern entrance – Alsinaa gate. The main department building is a three-story building. The first story has the administration offices and an auditorium. The second floor has the faculty offices and computer labs. The third floor has faculty offices and the classrooms. The building has two main entrances and it has a parking lot for the faculty.

Details	No.	Area ($m^{2)}$	Type
Classrooms	8	500	Furnished rooms with heating and cooling system. Area of each classroom 60 m2 . (Three of these rooms 67 m^2).
Computer Laboratories	2	186	For each grade, a computer lab. (area of 93 m2) with a cooling and heating system.
Faculty members rooms	13	260	Furnished rooms (different area) with a cooling and heating system.
Department Presidency Room	1	45	A furnished room with a cooling and heating system.
Department Decision Room	1	20	A furnished room with a cooling and heating system
Drawing Rooms	1	64	It has drawing tables, furnished with a cooling and heating system
Secretary and Printer Room	2	56	A furnished room with a cooling and heating system (area of Secretary room is 16 m^2), (area of Printer Room is 40 m^2).
Café Room	1	15	A furnished room with a cooling and heating system
Large Meeting Room	1	152	A furnished room with a cooling and heating system and equipped for extended administrative and scientific meetings.
Small Meeting Room	1	43	A furnished room with a cooling and heating system and ready for administrative meetings.

Department Laboratories

The department has three laboratories that have different types of devices and machines- which are regularly maintained. The tests in the laboratories provide a main contribution to academic research of the faculty and consulting and collaboration with the other government agencies and the consulting bureau. The laboratories are run by professors from the department that well known for their scientific and professional qualifications.

1. Environmental laboratory

This laboratory lies within the main campus and it is considered one of the newest labs in the college of engineering. The lab has most of the devices and instruments to measure the pollutants and perform the water and wastewater tests in addition to networks pipes and potable water filtering tests. All the devices and instruments are maintained and calibrated periodically. The laboratory presented a preliminary guide to the Central Organization for Standardization and Quality Control COSQC in Iraq as the first step to get the quality certification according to the Arab Union standards. Most lab devices were calibrated by the COSQC by the end of 2011 and got the calibration certificates. The lab is well ventilated and conditioned and the work environment is well organized.

The lab work includes:

- **Perform water tests, including, row, drinking, irrigation, wastewater, …etc, and compare it to the standards.**
- **Perform construction materials tests, including, cement, pipes, tiles, gravel, and filters for different government agencies and private sector and check their suitability to be used in construction and their environmental impact .**
- **Provide environmental and engineering consulting for government agencies and the private sector.**
- **Provide workshops through Nineveh Governorate training center- the general directorate of human resources for government employees.**
- **Perform research for the faculty and graduate students.**
- **Perform tests for undergraduate projects.**

Management quality policies in the lab.:

• All lab tests are according to ISO/IEC 17025/ 2005 standards and other specific requirements by the national accreditation agency in addition to the client needs .

• The lab manager and the staff ensure that all tests are performed professionally and without bias.

• The qualified lab staff- technical and management- are paid salaries regardless of the number of tests so that will not fall under any financial and economical pressure that may affect the results of the tests.

• The lab is structured in a way that every person has his own responsibility with a replacement that has the same efficiency to perform the required tasks. The financial and administrative department makes sure that all tests and final reports are documented and signed by the staff/ replacement that performed the tests .

• Only authorized personnel are allowed to the lab and the tests are performed discreetly and without bias.

• No direct contact is allowed between the clients and the lab staff .

• Any attempt to affect the tests' results is dealt with in a strict and professional way according to the lab regulations. An investigation will take place and if there is any bias- the staff participating will face an administrative penalty and the client causing the problem will be denied any lab service in the future .

Laboratory tests:

Drinking water tests	Approved specification	Devices
PH-value	Standard Specifications No. 417 of 2009 The second update on drinking water issued by the Central Organization for Standardization and Quality Control	(PH meter)
Electrical Conductivity (EC)		Device of (Ec)
Turbidity		Device of (Turbidity)
Total Hardness		
Hardness Calcium		
Calcium concenteration (Ca)		
Magnesium concenteration(Mg)		
Chloride concenteration (CI)		
Sulphate (SO_4)		
Total number of bacteria		Autoclave
Coliform Bacteria		Autoclave
Alkalinity and Acidity		
Nitrates (NO_3)		Color spectrophotometer
Phosphate (PO_4)		Color spectrophotometer
Biochemical Oxygen Demand (BOD)		Incubator
Chemical Oxygen Demand (COD)		Device of (COD)
Suspended solid matters and dissolved solid matters		Burning oven, Drying oven, Accurate balance

Industrial water tests	Approved specification	Devices
PH-value	Iraqi Specification of 1998	(PH meter)
(EC) Electrical Conductivity		Device of (Ec)
Turbidity		Device of (Turbidity)
Total Hardness		
Calcium concenteration(Ca)		
Magnesium concenteration(Mg)		
Chloride concenteration(CI)		
Sulphate(SO4)		
Alkalinity and Acidity		
Nitrates (NO3)		Color spectrophotometer
Phosphate (PO4)		Color spectrophotometer
Biochemical Oxygen Demand (BOD)		Incubator
Chemical Oxygen Demand (COD)		Device of (COD)
Suspended solid matters and dissolved solid matters		Burning oven, Drying oven, Accurate balance
Heavy metals		Multi-tests device

Sand and gravel tests for filters	Approved specification	Devices
Sieve analysis test	Iraqi Standard Specifications No. 1555 of 2000	Standard sieves, Drying oven
Granular density		Sensitive electronic balance, volumetric cylinder
Curing test		cylinder, drying oven
Weight loss due to acid		Standard solutions

Ceramic tests	Approved specification	Devices
Weight loss due to acid		Sensitive electronic balance
Pipes tests	**Approved specification**	**Devices**
Anhydrous acetone test	Iraqi Specifications (No. 1491)	
Toxicity test (Heavy metals)		Atomic absorption testing device

Cement material tests	Approved specification	Devices
Percentage of silica	American international standards specifications (ASTM-C150)	Burning oven Drying oven Hood electronic balance Ceramic and platinum dish Filter papers Burettes Magnetic mixers
Percentage of aluminum		
Percentage of Iron		
Percentage of Calcium		
Percentage of magnesium		
the rate of loss by burning		
the gypsum percentage		
the percentage of insoluble substances		
the percentage of free lime		

The following table shows the numbers and symbols of the devices available in the Environmental Engineering Laboratory:

Device name	No. of devices	Serial number	symbol
Air intake pump	1	1-1-13	MENEV
Jar test device	1	1-1-3	MENEV
Air compressor	2	2-1-31 2-2-31	MENEV
Autoclave	2	2-1-5 2-2-5	MENEV
Sterile	2	2-1-6 2-2-6	MENEV
Atomic absorption device	1	1-1-33	MENEV
pH meter	1	1-1-8	MENEV
Water bath	1	1-1-9	MENEV
Centrifuge	1	1-1-10	MENEV
Spectrometer (UV)	1	1-1-34	MENEV
Magnetic mixer	2	2-1-12 2-2-12	MENEV
Cooling room	1	1-1-35	MENEV
microscope	1	1-1-36	MENEV
Stone burning oven	1	1-1-37	MENEV
Water distillation device	2	2-1-14 2-2-14	MENEV
Incubator	1	1-1-20	MENEV
Sensitive balance	3	3-1-15 3-2-15 3-3-15	MENEV
Turbidity device	1	1-1-16	MENEV
Dissolved oxygen (DO) meter	1	1-1-17	MENEV
Hardness remover	2	2-1-38 2-2-38	MENEV
balance	1	1-1-43	MENEV
(COD) device	2	2-1-40 2-2-40	MENEV
Ions measuring device	1	1-1-11	MENEV
Photometric flame spectrometer	1	1-1-2	MENEV
device Electrical conductivity	1	1-1-42	MENEV
Phosphate measuring device (Spectro photometer)	1	1-1-44	MENEV
Heating heater	2	2-1-45 2-2-45	MENEV
(Hood)	2		MENEV
Multimeter device	1		MENEV

2-Computer Laboratory:

Two computer laboratories were established within the Environmental Engineering Department, equipped with modern computers (laptops), Periodic maintenance of the computers is carried out by the laboratory administrator, The laboratory has good lighting ,air conditioning (cooling and heating) and appropriate humidity.

3- Engineering Survey Laboratory

The laboratory includes multiple devices that contribute to training students in all measurement processes and everything that a surveying engineer needs in his professional life, The student learns about the leveling device, the theodolite device, scanning and projecting structures, determining the horizontal distance using a tape measure, etc.

University of Mosul / College of Engineering / Department of Environmental Engineering
First and Second Stage
2025-2024

Republic of Iraq - Ministry of Higher Education and Scientific Research
Mosul University
Bachelor's degree in Environmental Engineering (First cycle)
Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr
Program Curriculum (2024 - 2025)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة الموصل
بكالوريوس في هندسة البيئة (الدورة الأولى)
أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة
المنهاج الدراسي للعام ٢٠٢٤-٢٠٢٥

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGI	One	1	ENV111	Mathematics	الرياضيات	English	3				2		3	78	72	150	6.00	S	
		2	ENV112	Statics	ميكانيك السكون	English	3				2		3	78	72	150	6.00	S	
		3	ENV113	Engineering Drawing	الرسم الهندسي	English	0		6				3	93	82	175	7.00	S	
		3	ENV114	Environmental Thermodynamics	ثرموداينميك البيئة	English	2				1		3	48	52	100	4.00	S	
		5	ENV115	Statistics	الإحصاء	English	2						3	33	42	75	3.00	S	
		6	UOM1011	Arabic1	اللغة العربية 1(المستوى الاول)	Arabic	2						3	33	17	50	2.00	B	
		7	UOM1040	Democracy and Human Rights	الديمقراطية وحقوق الانسان(المستوى الاول)	Arabic	2						3	33	17	50	2.00	B	
						Total	14	0	6	0	5	0	21	396	354	750	30.00		
														25					
	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Two	1	ENV121	Calculus	حسابات التفاضل والتكامل	English	3				2		3	78	72	150	6.00	S	ENV111
		2	ENV122	Dynamics	ميكانيك الحركة	English	2				1		3	48	77	125	5.00	S	
		3	ENV123	Principles of Environmental Engineering	مبادئ هندسة البيئة	Arabic	2	2					3	63	37	100	4.00	C	
		4	ENV124	Environmental Geology	جيولوجيا البيئة	Arabic	2						3	33	42	75	3.00	S	
		5	ENV125	Drawing by Computer	الرسم بواسطة الحاسوب	English			4				3	63	112	175	7.00	S	ENV113
		6	UOM1031	Computer1	حاسوب 1(المستوى الاول)	English	1		2				3	48	27	75	3.00	B	
		7	UOM1021	English 1	اللغة الإنكليزية 1(المستوى الاول)	English	2						3	33	17	50	2.00	B	
						Total	12	2	6	0	3	0	21	366	384	750	30.00		
														23					
Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGII	Three	1	ENV211	Engineering Mathematics	الرياضيات الهندسية	English	3				2		3	78	72	150	6.00	S	ENV121
		2	ENV212	Fluids Mechanics	ميكانيك الموائع	English	2		2		1		3	78	47	125	5.00	C	
		3	ENV213	Environmental Chemistry	كيمياء البيئة	English	2		2				3	63	37	100	4.00	S	
		4	ENV214	Engineering Surveying	المساحة الهندسية	English	2		3				3	78	22	100	4.00	S	
		5	ENV215	Strength of Materials	مقاومة المواد	English	2				1		3	48	52	100	4.00	S	ENV112
		6	ENV216	Engineering Hydrology	علم المياه	English	2						3	33	42	75	3.00	S	
		7	UOM2050	The Crimes of the Baath Party in Iraq	جرائم حزب البعث في العراق	Arabic	2						3	33	17	50	2.00	B	
		8	UOM2022	English 2	اللغة الإنكليزية2	English	2						3	33	17	50	2.00	B	
						Total	17	0	7	0	4	0	24	444	306	750	30.00		
														28					
	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Four	1	ENV221	Water Quality Engineering	هندسة نوعية المياه	English	3		2				3	78	97	175	7.00	C	
		2	ENV222	Concrete and Building Technology	تكنلوجيا الخرسانة والبناء	English	3		2				3	78	72	150	6.00	S	
		3	ENV223	Survy Applications and GIS	تطبيقات المساحة ونظم المعلومات الجغرافية	English	2		3				3	78	72	150.00	6.00	S	
		4	ENV224	Microbiology	احياء مجهرية	English	2		2				3	63	87	150	6.00	S	
		5	UOM2012	Arabic2	اللغة العربية 2	Arabic	2						3	33	17	50	2.00	B	
		6	UOM2032	Computer2	حاسوب 2	English	2		2				3	63	12	75	3.00	B	
						Total	14	0	11	0	0	0	18	393	357	750	30.00		
														25					

University of Mosul / College of Engineering / Department of Environmental Engineering

Curriculum / year 2024-2025

First level (Autumn semester)									
Requirement Name	Requirement Type (Compulsory - Elective)	Course Name		Theoretical Hours	Applied Hours	Units	Pre-request Course, if present	Code	Notes
		Arabic language	English language						
University	Compulsory	اللغة العربية	Arabic language	2	0	2		UOMC 100	
College	Compulsory	الحاسوب	computer	2	2	3		UOMC 102	
Department	Compulsory	حقوق وحريات	human rights & freedom	2	0	2		UOMC 103	
	Compulsory	رياضيات 1	Calculus 1	2	2	3		ENGC 121	
	Compulsory	رسم هندسي	Engineering drawing	0	3	1		ENGC 123	
	Compulsory	ميكانيك السكون	Static mechanic	3	0	3		ENVC 140	
	Compulsory	برمجة	programing	1	2	2		ENVC 141	
Credits summation of the first semester				19	5	21			

First level (Spring semester)									
Requirement Name	Requirement Type (Compulsory - Elective)	Course Name		Theoretical Hours	Applied Hours	Units	Pre-request Course, if present	Code	Notes
		Arabic language	English language						
University	Elective	تأسيسات كهربائية	Electrical installation	2	0	2			
	Elective	عمليات تصنيع	Manufacturing Processing	2	0	2			
Department	Compulsory	تحليالت هندسية وعددية	Engineering and numerical analysis	2	0	2	Engineering mathematics	ENV246	
	Compulsory	ميكانيك الموائع	Fluids mechanic	3	2	4	dynamic , Static mechanic	ENV247	
	Compulsory	هندسة نوعية مياه	Water quality engineering	2	2	3	Environmental engineering	ENV248	
	Compulsory	تطبيقات نظم معلومات جغرافية	GIS application	1	2	2	Engineering surveying	ENV249	
	Compulsory	انشاء المباني	Buildings construction	2	0	2	Construction materials	ENV250	
	Compulsory	علم المياه	Hydrology	3	0	3	Statistics	ENV251	
	Compulsory	احياء مجهرية	Microbiology	2	2	3		ENV252	
Credits summation of the first semester				17	8	21			

Second level (Autumn semester)									
Requirement Name	Requirement Type (Compulsory - Elective)	Course Name		Theoretical Hours	Applied Hours	Units	Pre-request Course, if present	Code	Notes
		Arabic language	English language						
University	Compulsory	اللغة الإنكليزية – ماقبل المتوسط	English language - preIntermediate	1	0	1		UOMC	
College	Compulsory	احصاء	Statistics	2	0	2		ENGC227	
Department	Compulsory	رياضيات هندسية	Engineering mathematics	4	0	4	Calculus2	ENV240	
	Compulsory	مساحة هندسية	Engineering surveying	4	3	5	Calculus2	ENV241	
	Compulsory	مبادئ هندسة البيئة	Principles of Environmental engineering	2	0	2	chemistry	ENV242	
	Compulsory	مقاومة المواد	Strength of materials	3	0	3	Static mechanic	ENV243	
	Compulsory	مواد انشائية	Construction materials	1	2	2		ENV244	
	Compulsory	تحسس نائي تطبيقات بيئية	Environmental remote sensing	2	0	2		ENV245	
Credits summation of the first semester				19	5	21			

Second level (Spring semester)									
Requirement Name	Requirement Type (Compulsory - Elective)	Course Name		Theoretical Hours	Applied Hours	Units	Pre-request Course, if present	Code	Notes
		Arabic language	English language						
University	Elective	تأسيسات كهربائية	Electrical installation	2	0	2			The student selects one course
	Elective	عمليات تصنيع	Manufacturing Processing	2	0	2			
Department	Compulsory	تحليالت هندسية	Engineering analysis	2	0	2	Engineering mathematics	ENV246	
	Compulsory	ميكانيك الموائع	Fluids mechanic	3	2	4	dynamic, Static mechanic	ENV247	
	Compulsory	هندسة نوعية مياه	Water quality engineering	2	2	3	Principles of Environmental engineering	ENV248	
	Compulsory	تطبيقات نظم معلومات جغرافية	GIS application	1	2	2	Engineering surveying	ENV249	
	Compulsory	انشاء المباني	Buildings construction	2	0	2	Construction materials	ENV250	
	Compulsory	علم المياه	Hydrology	3	0	3	Statistics	ENV251	
	Compulsory	احياء مجهرية	Microbiology	2	2	3		ENV252	
Credits summation of the first semester				21	8	21			

Third level (Autumn semester)									
Requirement Name	Requirement Type (Compulsory - Elective)	Course Name		Theoretical Hours	Applied Hours	Units	Pre-request Course, if present	Code	Notes
		Arabic language	English language						
College	Compulsory	سلامة عامة	Public safety	2	0	2		ENG329	
	Elective	تحليلات عددية	Numerical analysis	2	0	2	Calculus 2	ENG 320	
Department	Compulsory	شبكات اسالة	Water supply network	3	0	3	Fluids mechanic	ENV 340	
	Compulsory	تطبيقات هيدروليك	Hydraulic application	3	0	3	Fluids mechanic	ENV 341	
	Compulsory	ميكانيك تربة	Soil mechanics	3	2	4	Environmental geology ،Static mechanic, Fluids mechanic	ENV 342	
	Compulsory	تلوث الهواء	Air pollution	3	0	3	Environmental thermodynamic Fluids mechanic ، chemistry ، Principles of Environmental engineering	ENV 343	
	Compulsory	هندسة مياه الفضلات	Waste water engineering	2	0	2	Water quality engineering chemistry	ENV 344	
	Compulsory	بحث هندسي	Engineering research	2	0	2		ENV 345	
Credits summation of the first semester				20	2	21			

Third level (Spring semester)									
Requirement Name	Requirement Type (Compulsory - Elective)	Course Name		Theoretical Hours	Applied Hours	Units	Pre-request Course, if present	Code	Notes
		Arabic language	English language						
University	Compulsory	اللغة الانكليزية-متوسط	English language intermediate	2	0	2		UOMC	
Department	Compulsory	شبكات الصرف الصحي	Sanitary sewer networks	3	0	3	Calculus 2	ENV 346	
	Compulsory	هندسة الاسس	Foundation engineering	3	0	3	Fluids mechanic	ENV 347	
	Compulsory	كيمياء المياه	Water chemistry	3	0	3	Fluids mechanic	ENV 348	
	Compulsory	خرسانة مسلحة	Reinforcement concrete	3	0	3	Environmental geology, Static mechanic, Fluids mechanic	ENV 349	
	Compulsory	نفايات صلبة	Solid waste	4	0	4	Environmental thermodynamic Fluids mechanic ، chemistry ، Principles of Environmental engineering	ENV 350	
	Elective	تلوث الضوضاء	Noise pollution	2	0	2	Water quality engineering ، chemistry	ENV 390	The student selects one course
	Elective	التلوث الحراري والاشعاعي	Thermal pollution	2	0	2		ENV 391	
Credits summation of the first semester				20	0	20			

Forth level (Autumn semester)									
Requirement Name	Requirement Type (Compulsory - Elective)	Course Name		Theoretical Hours	Applied Hours	Units	Pre-request Course, if present	Code	Notes
		Arabic language	English language						
College	Compulsory	إدارة هندسية	Engineering management	2		2		ENG 425	
	Elective	هندسة البيئة المستدامة	Environmental engineering and Sustainable	2		2		ENG 436	
Department	Compulsory	معالجة مياه الشرب	Drinking water treatment	4		4	Water quality engineering, Water supply network ، Hydraulic application	ENV440	
	Compulsory	تصاميم محطات معالجة مياه الفضلات	Wastewater treatment design	4		4	Water quality engineering ، Sanitary sewer networks ، Hydraulic application	ENV441	
	Compulsory	تصاميم انشائية بيئية	Environmental construction design	3		3	Reinforcement concrete ، Foundation engineering	ENV442	
	Compulsory	السيطرة على تلوث الهواء	Air pollution control	3		3	Air pollution	ENV443	
	Compulsory	مشروع هندسي1	Engineering Project_1	2		2		ENV444	
Credits summation of the first semester				20	0	02			

Forth level (Spring semester)									
Requirement Name	Requirement Type (Compulsory - Elective)	Course Name		Theoretical Hours	Applied Hours	Units	Pre-request Course, if present	Code	Notes
		Arabic language	English language						
University	Compulsory	اللغة الإنكليزية - متقدم	English language -Advanced	2		2		UOM	
College	Compulsory	اقتصاد هندسي	Engineering economic	2		2	Engineering management	ENG426	
Department	Compulsory	معالجة فضلات صناعية وخطرة	Industrial and hazardous wastewater	4		4	Wastewater treatment design	ENV445	
	Compulsory	تلوث التربة والمياه الجوفية	Soil and ground water pollution	3		3	Water quality engineering ، Hydrology	ENV446	
	Compulsory	رسم انشائي	Construction drawing	2		2	Engineering drawing ، Reinforcement concrete	ENV447	
	Compulsory	تخمين	Estimation	2		2		ENV448	
	Compulsory	مشروع هندسي2	Engineering Project - 2	2		2		ENV449	
	Compulsory	معالجة مياه شرب متقدمة	Advance water supply	2		2	Drinking water treatment	ENV490	The student selects one course
	Compulsory	معالجة مياه فضلات متقدمة	Advance wastewater treatment	2		2	Wastewater treatment design	ENV491	
Credits summation of the first semester				19	0	19			

University of Mosul / College of Engineering / Department of Environmental Engineering
First and Second Stage
2025-2024

Republic of Iraq - Ministry of Higher Education and Scientific Research
Mosul University
Bachelor's degree in Environmental Engineering (First cycle)
Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr
Program Curriculum (2024 - 2025)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة الموصل
بكالوريوس في هندسة البيئة (الدورة الأولى)
أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة
المنهاج الدراسي للعام ٢٠٢٤-٢٠٢٥

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGI	One	1	ENV111	Mathematics	الرياضيات	English	3				2		3	78	72	150	6.00	S	
		2	ENV112	Statics	ميكانيك السكون	English	3				2		3	78	72	150	6.00	S	
		3	ENV113	Engineering Drawing	الرسم الهندسي	English	0		6				3	93	82	175	7.00	S	
		3	ENV114	Environmental Thermodynamics	ثرموداينميك البيئة	English	2				1		3	48	52	100	4.00	S	
		5	ENV115	Statistics	الإحصاء	English	2						3	33	42	75	3.00	S	
		6	UOM1011	Arabic1	اللغة العربية 1(المستوى الاول)	Arabic	2						3	33	17	50	2.00	B	
		7	UOM1040	Democracy and Human Rights	الديمقراطية وحقوق الانسان(المستوى الاول)	Arabic	2						3	33	17	50	2.00	B	
						Total	14	0	6	0	5	0	21	396	354	750	30.00		
														25					
	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Two	1	ENV121	Calculus	حسابات التفاضل والتكامل	English	3				2		3	78	72	150	6.00	S	ENV111
		2	ENV122	Dynamics	ميكانيك الحركة	English	2				1		3	48	77	125	5.00	S	
		3	ENV123	Principles of Environmental Engineering	مبادئ هندسة البيئة	Arabic	2	2					3	63	37	100	4.00	C	
		4	ENV124	Environmental Geology	جيولوجيا البيئة	Arabic	2						3	33	42	75	3.00	S	
		5	ENV125	Drawing by Computer	الرسم بواسطة الحاسوب	English			4				3	63	112	175	7.00	S	ENV113
		6	UOM1031	Computer1	حاسوب 1(المستوى الاول)	English	1		2				3	48	27	75	3.00	B	
		7	UOM1021	English 1	اللغة الإنكليزية 1(المستوى الاول)	English	2						3	33	17	50	2.00	B	
						Total	12	2	6	0	3	0	21	366	384	750	30.00		
														23					
Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
UGII	Three	1	ENV211	Engineering Mathematics	الرياضيات الهندسية	English	3				2		3	78	72	150	6.00	S	ENV121
		2	ENV212	Fluids Mechanics	ميكانيك الموائع	English	2		2		1		3	78	47	125	5.00	C	
		3	ENV213	Environmental Chemistry	كيمياء البيئة	English	2		2				3	63	37	100	4.00	S	
		4	ENV214	Engineering Surveying	المساحة الهندسية	English	2		3				3	78	22	100	4.00	S	
		5	ENV215	Strength of Materials	مقاومة المواد	English	2				1		3	48	52	100	4.00	S	ENV112
		6	ENV216	Engineering Hydrology	علم المياه	English	2						3	33	42	75	3.00	S	
		7	UOM2050	The Crimes of the Baath Party in Iraq	جرائم حزب البعث في العراق	Arabic	2						3	33	17	50	2.00	B	
		8	UOM2022	English 2	اللغة الإنكليزية2	English	2						3	33	17	50	2.00	B	
						Total	17	0	7	0	4	0	24	444	306	750	30.00		
														28					
	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
	Four	1	ENV221	Water Quality Engineering	هندسة نوعية المياه	English	3		2				3	78	97	175	7.00	C	
		2	ENV222	Concrete and Building Technology	تكنلوجيا الخرسانة والبناء	English	3		2				3	78	72	150	6.00	S	
		3	ENV223	Survy Applications and GIS	تطبيقات المساحة ونظم المعلومات الجغرافية	English	2		3				3	78	72	150.00	6.00	S	
		4	ENV224	Microbiology	احياء مجهرية	English	2		2				3	63	87	150	6.00	S	
		5	UOM2012	Arabic2	اللغة العربية 2	Arabic	2						3	33	17	50	2.00	B	
		6	UOM2032	Computer2	حاسوب 2	English	2		2				3	63	12	75	3.00	B	
						Total	14	0	11	0	0	0	18	393	357	750	30.00		
														25					

University of Mosul / College of Engineering / Department of Environmental Engineering

Courses system/ year 2024-2025

First stage

Code	Subject	First Semester Weekly Houres			Credit Hours	Achievement Weight	Final Exam Weight
		Theoretical	Practical	Tutorial			
ENV101	Calculus I	5	-	-	5	40	60
ENV102	Static	4	-	-	4	40	60
ENV103	Engineerign Drawing	-	6	-	3	60	40
ENV104	Programing	2	2	-	3	50	50
ENV105	Environmental Geology	2	-	-	2	40	60
ENV106	Statistics	3	-	-	3	40	60
ENV107	English Language	2	-	-	2	40	60
ENV108	Humane Rights and Public Liberities	2	-	-	2	40	60
Sum		20	8	0	24		
Number of Weekly Hours		28					

Code	Subject	Second Semester Weekly Houres			Credit Hours	Achievement Weight	Final Exam Weight
		Theoretical	Practical	Tutorial			
ENV109	Calculus II	5	-	-	5	40	60
ENV110	Dynamic	3	-	-	3	40	60
ENV111	Principles of Environmental Engineering	3	-	-	3	40	60
ENV112	Microbiology	3	2	-	4	50	50
ENV113	Environmental Thermodynamic	2	-	-	2	40	60
ENV114	Drawing by Commputer	-	4	-	2	50	50
ENV115	Discriptive Geometry	-	3	-	1	50	50
Sum		16	9	0	20		
Number of Weekly Hours		25					

Second stage

Code	Subject	First Semester Weekly Houres			Credit Hours	Achievement Weight	Final Exam Weight
		Theoretical	Practical	Tutorial			
ENV201	Fluid Mechanics	4	2	-	5	50	50
ENV202	Engineerign Analysis	3	-	1	4	40	60
ENV203	Envireonmental Chemistry	4	2	-	5	50	50
ENV204	Principle of Engineeign Surving	3	3	-	4	50	50
ENV205	Remote Sensing	2	-	-	2	40	60
ENV206	Construction Materials	1	2	-	2	50	50
ENV207	Crimes of Al-Baath Party	2	-	-	2	40	60
Sum		19	9	1	24		
Number of Weekly Hours		29					

Code	Subject	Second Semester Weekly Houres			Credit Hours	Achievement Weight	Final Exam Weight
		Theoretical	Practical	Tutorial			
ENV208	Water Quality Engineering	3	2	-	4	50	50
ENV209	Hydraulic Applications	3	-	-	3	40	60
ENV210	Hydrology	3	-	-	3	40	60
ENV211	Survy Application and GIS	2	2	-	3	50	50
ENV212	Strength Matrial	3	-	-	3	40	60
ENV213	Numerical Analysis	2	-	-	2	40	60
ENV214	Biulding Construction	2	-	-	2	40	60
Sum		18	4	0	20		
Number of Weekly Hours		22					

Third stage

Code	Subject	First Semester Weekly Houres			Credit Hours	Achievement Weight	Final Exam Weight
		Theoretical	Practical	Tutorial			
ENV301	Soil Mechanics	4	2	-	5	50	50
ENV302	Water Supply Networks	3	-	-	3	40	60
ENV303	Principles of Air Pollution	3	-	-	3	40	60
ENV304	Wastewater Engineering	3	-	-	3	40	60
ENV305	Fundumental of Solid Waste	3	-	-	3	40	60
ENV306	Sustaniablity Engineering	2	-	-	2	40	60
Sum		18	2	0	19		
Number of Weekly Hours		20					

Code	Subject	Second Semester			Credit Hours	Achievement Weight	Final Exam Weight
		Weekly Houres					
		Theoretical	Practical	Tutorial			
ENV307	Sewer Networks	3	-	-	3	40	60
ENV308	Foundation Engineering	3	-	-	3	40	60
ENV309	Air Pollution Control	3	-	-	3	40	60
ENV310	Reinforced Concrete	3	-	-	3	40	60
ENV311	Solid Waste Management	3	-	-	3	40	60
ENV312	Noise Pollution	2	-	-	2	40	60
ENV313	Radiation and Thermal Pollution	2	-	-	2	40	60
Sum		19	0	0	19		
Number of Weekly Hours		19					

Fourth stage

Code	Subject	First Semester			Credit Hours	Achievement Weight	Final Exam Weight
		Weekly Houres					
		Theoretical	Practical	Tutorial			
ENV401	Drinking Water Treatment	4	-	-	4	40	60
ENV402	Treatment Plant Wastewater	4	-	-	4	40	60
ENV403	Constrution Drawing Civil and	1	2	-	2	40	60
ENV404	Structural Design Environmental	3	-	-	3	40	60
ENV405	Management Project	2	-	-	2	40	60
ENV406	Project Engineerig	2	-	1	2	40	60
Sum		16	2	1	17		
Number of Weekly Hours		19					

Code	Subject	Second Semester			Credit Hours	Achievement Weight	Final Exam Weight
		Weekly Houres					
		Theoretical	Practical	Tutorial			
ENV407	Industrial and Petroluim Wastewater Treatment	4	-	-	4	40	60
ENV408	Groundwater Pollution Soil and	3	2	-	4	50	50
ENV409	Treatment Sludge	2	-	-	2	40	60
ENV410	Estimation and Specification	2	-	-	2	40	60
ENV411	Economy Engineering	2	-	-	2	40	60
ENV412	Project Engineering	2	-	-	2	40	60
Sum		15	2	0	16		
Number of Weekly Hours		17					

Research Area Considered in Department of Environmental Engineering

The research area of the teachers of the Department of Environmental Engineering are divided into several directions as follows:

1- Civil and industrial waste water treatment:

One of the most important problems that many cities suffer from, which is water pollution as a result of civil and industrial wastewater. Researchers are seeking to find solutions to get rid of this problem.

2- Soil and groundwater pollution:

Soil and groundwater pollution causes disturbances in the environmental balance, which endangers the health of living organisms. Therefore, researchers resort to proposed solutions to control soil and groundwater pollution to preserve the environment.

3- Air Pollution Control:

One of the most dangerous types of pollution is air pollution for two main reasons: the first is the limited air supply and the second is the inability of humans to do without air for more than a few minutes, To control any source of air pollution, this requires complete knowledge of the pollutant and the source, especially the physical and chemical information of emissions coming from the source.

4- Traditional and advanced drinking water treatment methods:

Different methods are used to treat drinking water to rid it of contaminants and make it safer. The treatment method depends on the water source, which motivates researchers to conduct research to study and find modern methods of treatment.

5- Sustainable environmental engineering:

Sustainable engineering focuses on reducing the production of energy that is harmful to the environment and using alternatives that provide the same efficiency with less damage and cost, which has encouraged researchers to pay attention to this way.

6- Sewer networks and sewage networks:

Sewerage and sewage networks are a complex system of pipes, pumps, and other facilities to provide clean water and remove waste, and their design requires a set of procedures and steps that must be followed by researchers.

7- Management and treatment of solid waste:

This line of research includes waste management in terms of collecting, transporting, and then treating it. Researchers seek to conduct research to study this process and find modern methods in this way.

University of Mosul
College of Engineering

This guide has been prepared under the guidance of the Dean of the College of Engineering

Professor Dr. Abdul Rahim Ibrahim Jassim

Under the supervision of the Head of the Environmental Engineering Department

Assistant Professor

Dr. Abdullah Ismael Ibrahem

To serve as a reference for introducing the Department of Environmental Engineering, its members, and the study programs for undergraduate and graduate studies

coordination

Department of Media and Government Communication at the College of Engineering

2025 Edition