COLLEGE OF ENVIRONMENTAL SCIENCES

GUIDE
DEPARTMENT OF CIIMATE CHANGE
2025

Prof. Dr. Muthanna Jassim Mohammed Al-Taie

Dean of the College

Dr. Muhammad Walid Saeed Al-Abbasi Al-Taie

Assistant for Scientific Affairs

Dr. Shaima Khalil Abdullah Al-Hayali

Assistant for Administrative Affairs

Prof. Dr. Mohamed Ibrahim Khalil

Head of the Department of Environmental Sciences

Dr. Iyad Fadhil Qasim

Head of Environmental Technology Department

Dr. Ali Zain Al-Abidin Haider Al-Ozeer

Head of Climate Change Department

Dr. Rehab Abdel-Jabbar Hamed

Head of Environmental Health Department

Introduction

University of Mosul has been one of the most important educational and research institutions in Iraq since its founding in 1967. Its importance lies in its role as a distinctive pillar within the institutional framework of the Ministry of Higher Education and Scientific Research, operating in accordance with its instructions, curricula, and laws. Today, it comprises 24 colleges and eight research and educational centers, a newly established center for the IELTS English language test, and another for the national test. It also includes a research center for medical specialties, a specialized teaching hospital, and mobile clinics. In the field of scientific publishing, its peer-reviewed scientific journals occupy an active and advanced position in the global Scopus database. The university has also entered the most important international scientific rankings and has achieved a distinguished presence. It boasts museums, theaters, and a central library. The University of Mosul has raised the slogan of serving society, embracing a sustainable development approach to environmental conservation.

The College of Environmental Sciences was established at the heart of the University of Mosul in 2006, carrying with it a noble mission: protecting the environment and conserving its resources is not merely a moral responsibility. Rather, it is a science, a thought, and a renewed practical practice based on accurate knowledge, conscious planning, and effective partnerships with various sectors of society to serve the environment and the labor market. This approach aims to strengthen partnerships and integration with governmental and private institutions in light of the global shift toward a green economy and sustainable development. This is achieved through implementing applied research projects that contribute to achieving sustainable development, raising environmental awareness in society, making a real difference, and building a sustainable and prosperous environmental future.

Among the departments of the College of Environmental Sciences, the Department of Environmental Technology emerged at the beginning of the 2009-2010 academic year, having been part of the college's founding branches in 2006. The Department of Environmental Technology is one of the most important departments at the University of Mosul within the College of Environmental Sciences, having been established in 2009. The total number of students enrolled over the past five years has reached 1,569. The Department Council consists of eight members: the Department Head, the Department Rapporteur, and six faculty members. The department's graduates contribute to understanding and describing environmental problems and finding appropriate solutions to them, thus serving society and the labor market.

Department management

Dr. Ali Zain Al-Abidin Haider Al-Azir

- Head of Department
- General Specialization: Geology
- Specialization: Hydrology

Dr. Marwan Saleh Jameel

- Department Curriculum
- Major: Computer Science
- Minor: Computational Mathematics

Department building

The Department of Climate Change is a pioneering and distinguished department in the Iraqi academic arena. It is the first of its kind in Iraq and was established in the 2024-2025 academic year in response to the growing environmental and climate challenges facing the world, particularly the region.

The establishment of this department was a strategic step aimed at preparing specialized scientific cadres capable of understanding and analyzing the phenomenon of climate change and its environmental, economic, and social impacts, and contributing to the development of appropriate solutions and policies to adapt to and mitigate these changes. The department also seeks to promote scientific research in this vital field and collaborate with local and international institutions concerned with the environment and climate.

The Climate Change Department's Role in Serving the Community...

1. Community Awareness:

- Organizing workshops, seminars, and media and educational campaigns to raise awareness about the risks of climate change and its impacts on health, agriculture, and natural resources.
- Involving department students in field activities to communicate with the local community and disseminate environmental knowledge.

2. Applied Scientific Research:

- Conducting field studies on climate change in Iraq and its impact on environmentally sensitive areas.
- Providing scientific recommendations to government agencies and decision-makers based on research findings.

3. Consulting and Technical Support:

- Providing advisory services to agricultural, industrial, and municipal institutions on how to adapt to climate change.
- Contributing to the development of plans to manage environmental disasters and mitigate their impacts.

4. Environmental Policy Support:

- Contributing to the formulation of national climate-related environmental policies and participating in the preparation of national and international climate change reports.
- Working with relevant ministries to develop climate change mitigation and adaptation strategies.

5. Building community partnerships:

- Collaborating with schools, civil society organizations, and the private sector to spread the culture of environmental sustainability.

Task description

Job Description for the Head of the Climate Change Department...

The Head of the Climate Change Department is responsible for leading and organizing various aspects of the department's work, including academic and administrative affairs, as well as following up on student affairs. He or she oversees the development of the department's strategic plans and ensures their implementation to ensure the achievement of research and academic objectives. He or she also monitors the progress of academic activities and directs efforts toward innovation and continuous development in the fields of environmental and climate studies.

He or she also coordinates relations with local and international institutions to promote research collaborations and ensures the provision of educational and administrative requirements to ensure efficient operation. He or she regularly reviews the curriculum and discusses proposed improvements with faculty members and the College Council to enhance the quality of education.

In addition, the Head of the Department oversees the organization of lectures and training courses and works to host specialized experts to provide qualitative contributions to the academic field. He or she monitors student attendance and ensures that theoretical and practical exams are conducted to ensure an advanced academic standard.

He or she also prepares periodic reports on the department's activities and supervises the evaluation of scientific research submitted for academic promotion. He or she examines the department's needs for teaching, technical, and administrative staff and proposes plans related to annual academic admissions and course distribution. It also organizes periodic meetings with students to understand their aspirations and provide solutions to the challenges they face, contributing to the creation of a stimulating and advanced learning environment.

Description of the duties of the Climate Change Department coordinator

The coordinator assists the department head by organizing department affairs, monitoring daily student absences, supervising the equipping of classrooms with necessary supplies, and developing study and exam schedules.

Department Council Duties.

The council collaborates with the department head in overseeing the educational process, the progress of the educational process, and the workflow in the department, monitoring the implementation of the learning plan, and developing academic and educational staff.

Academic Committee.

The committee participates with the department head in all academic decisions related to curriculum development, reviewing faculty promotions, and obtaining research and testimonials.

Quality Committee.

Promoting a culture of quality and supporting related activities by applying quality standards in all aspects of work to improve the outcomes of the teaching and learning process. It also supervises academic assessment and accreditation activities, supports continuous quality improvement, monitors the preparation of departmental program

descriptions and reports, monitors the preparation of course descriptions and reports, and departmental statistics. It also performs other tasks assigned to the unit related to quality and their implementation.

Examination Committee.

Follows up on semester, mid-year, and final student exams, organizes proctoring schedules, and distributes proctors to classrooms. It receives exam questions and exam results from faculty members, organizes them, and maintains their confidentiality. It conducts statistics on final results, determines pass and fail rates for students taking the exam, and monitors the organization of the exam process for students taking the supplementary exams.

Audit Committee.

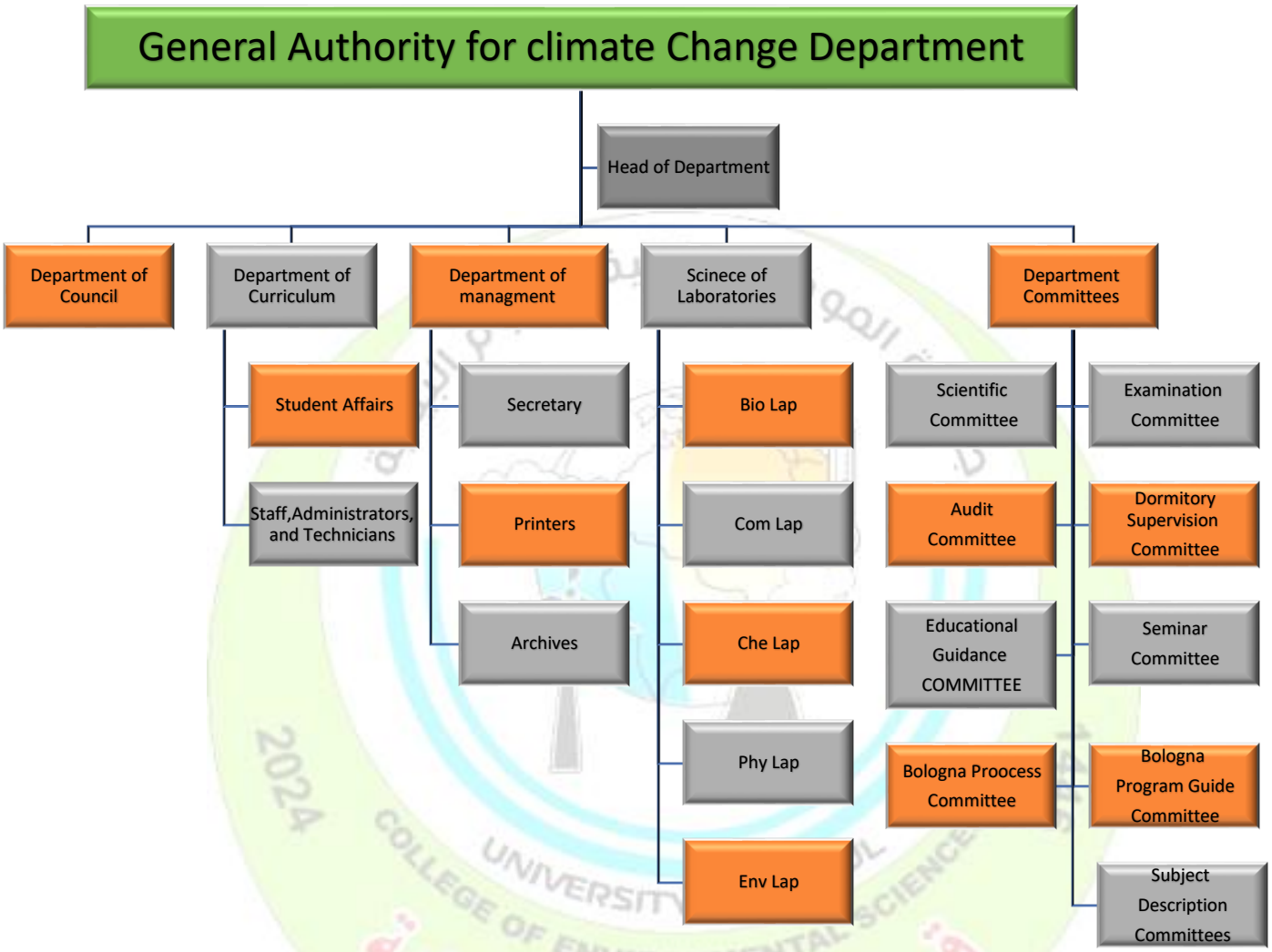
Its work coincides with the work of the department's examination committee during exams and the announcement of results. Its members review grades received from faculty members, the efforts and grades recorded on grade cards, and also review exam results before they are announced to students.

Continuing Education and Seminars Committee.

Follows up on continuing education courses conducted by department faculty for engineering staff in the various governorate departments, as well as seminars and conferences held by the department.

Guidance Committee.

Meet with students to identify academic problems and obstacles they encounter, and prepare a report on this.


General Authority for climate Change Department
Head of Department
Department of Council
Department of Curriculum
Department of managment
Scinece of Laboratories
Department Committees
Student Affairs
Staff,Administrators, and Technicians
Secretary
Printers
Archives
Bio Lap
Com Lap
Che Lap
Phy Lap
Env Lap
Scientific Committee
Audit Committee
Educational Guidance COMMITTEE
Bologna Proocess Committee
Examination Committee
Dormitory Supervision Committee
Seminar Committee
Bologna Program Guide Committee
Subject Description Committees

Faculty members

NO	Instructor's Name	Academic Title	Specialization	University Email
1	Ali Zain Al-Abidin Haider	Doctor	Geology/Hydrogeology	aalozeer@uomosul.edu.iq
2	Hazem Jumaa Mahmoud Al-Mohammad	Doctor	Geology/Geochemistry	hazimjm@uomosul.edu.iq
3	Marwan Saleh Jamil	Doctor	Computational Mathematics/	marwan.jameel@uomosul.edu.iq
4	Mohammed Yahya Ali	Doctor	Optimalism	mohammedallawy@uomosul.edu.iq
5	Omar Karim Younis	Doctor	Biology/Mycology	omer.abbosh@uomosul.edu.iq
6	Ebtihal Idris Kanaan	Teacher	Physical/Life Sciences	kanaan84@uomosul.edu.iq
7	Asmaa Imad Abdul	Doctor	Life Sciences/Biotechnology	asmaaemad@uomosul.edu.iq
8	Farah Khazal Saeed Al-Hajj Zubair	Assist lecture	Physical Sciences/Solid State	f.saeed@uomosul.edu.iq
9	Rand Atbah Farqad Al-Jamil	Assist lecture	Dam and Resource Engineering/Hydrology	rand.o.farqad@uomosul.edu.iq
10	Salem Rabie Hassan Zanad	Assist lecture	Environmental Sciences/Environmental Sciences	salim.znad@uomosul.edu.iq
11	Ahmed Abdel Atallah	Assist lecture	Environmental Sciences/Environmental Sciences	ahmed.a.atallah@uomosul.edu.iq
12	Hassan Jamal Abdullah Al-Bazzaz	Assist lecture	Environmental Sciences/Environmental Sciences	hasanalbazaz@uomosul.edu.iq

13	Rahma Taher Qasim	Assist lecture	Water Resources Engineering/Dams and Water Resources	rahmatq563@uomosul.edu.iq
14	Layali Adel Saber	Assist lecture	Life Sciences/Botany	layali.alsalim@uomosul.edu.iq
15	Ahmed Ismail Suleiman	Assist lecture	Geography/Remote Sensing	ahmed.ismael@uomosul.edu.iq
16	Israa Abdul Bari Raouf	Assist lecture	Agriculture and Forestry/Soil and Water Resources Sciences	esraa.raaoof@uomosul.edu.iq
17	Basma Ghazwan Ghanem Taha	Assist lecture	Biology/Mycology	gbasma221@uomosul.edu.iq
18	Lina Noufal Mohammed Saleh	Assist lecture	Earth Sciences/Remote Sensing	lena@uomosul.edu.iq
19	Suha Salim Mahjoub Al-Khalaf	Assist lecture	Chemistry/Inorganic Sciences	suha.saleem@uomosul.edu.iq

Department's scientific laboratories

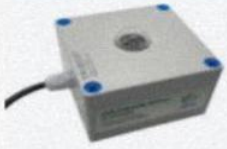
Climate Change Laboratory

The Climate Change Laboratory is a key pillar of the Climate Change Department. It was established to address contemporary environmental and climate challenges and serve the purposes of scientific research and academic and applied training. The laboratory provides an advanced environment for studying and analyzing climate phenomena and their impacts on the environment and natural resources.

The main objectives of the laboratory:

- Monitoring and analyzing climate variables such as temperature, humidity, atmospheric changes, and evaporation and precipitation rates.
- Simulating climate change scenarios using advanced computer models.
- Conducting experiments on the impact of climate change on soil, water, vegetation, and ecosystems.
- Supporting student graduation projects and applied research.
- Training students in the use of climate measurement and monitoring tools and data analysis.

Hunan Rika Electronic Tech Co.,Ltd

Item No.	Model	Description	Quantity (pcs)	
1	RK100-02	Wind Speed Sensor Material: carbon fiber Test range: 0~45m/s Signal output: Pulses, 4-20mA, 0-5V, RS485 optional Supply voltage: 5V, 12-24V optional IP65 with CE Cable length:2.5m	1	
2	RK110-02	Wind Direction Sensor Material : carbon fiber Test range: 0~360° Signal output: 4-20mA/0-5V/RS485 Resolution : 1° Supply voltage: 12-24V/5V Cable length: 2.5m cable IP55 with CE	1	
3	RK210-01	Illumination Sensor Range: 0-2000lux, 0-20klux,0-200klux optional Spectral range: 380-780nm Supply: 12-24VDC Output: 4-20mA, 0-5V, 0-10V, RS485 optional Accuracy: <5%FS Display: LCD optional Shell material: ABS Cable length: 2m	1	
4	RK200-04	Solar Radiation Sensor Spectral range: 300 1100nm Range: 0-1500W/m2 Supply: 12-24VDC Output: 0-5V, 4-20mA, RS485 optional Non-linear: ≤±3% Stability: ≤±2%/year Cable length: 2.5m IP65	1	
5	RK300-03B	Outdoor CO2 Transmitter range: 0-5000ppm, 0-10000ppm optional output: 4-20mA,0-5V,0-10V,RS485 optional accuracy: ±3%FS Supply: 12-24V,5V optional cable length: 2m with solar radiation shield and mounting parts	1	

6	Rk330-01B	Atmospheric Temperature Humidity & Pressure Sensor Temperature Range: -40~60°C, resolution: 0.1°C, Accuracy: ±0.5°C Humidity Range: 0-100%RH, Resolution: 0.5%RH, Accuracy: ±3%RH Pressure Range: 10-110kPa(100-1100hPa), resolution: 0.1hPa, Accuracy: ±1hPa Supply:5VDC, 12-24VDC optional Output: RS485(MODBUS),IIC,SDI-12 optional Cable length: 3m IP65 Without radiation shield	1	
7	RK300-02B	Outdoor PM2.5 Dust Sensor Range: 0-1000ug/m3 Output: 4-20mA,0-5V,0-10V,RS485 optional Accuracy: ±3%FS@25℃ Supply: 12-24V，5VDC optional Cable length: 2m With solar radiation shield and mounting parts	1	
8	RK400-04	Economical tipping bucket rainfall Sensor Material: ABS Range: ≤4mm/min Resolution: 0.2mm Accuracy(2mm/min): ±4% Output: pulses(@10kΩ&0.01uF) calbe length: 1.5m	1	
9	Carbon monoxide	Detection range: 0-1000ppm Resolution: 1ppm Accuracy: 5% With radiation shield	1	
10	Ozone	Detection range: 0-20ppm Resolution: 0.1ppm Accuracy: 5% With radiation shield	1	
11	Sulfur dioxide	Detection range: 0-20ppm Resolution: 0.1ppm Accuracy: 5% With radiation shield	1	
13	RK95-29	WIFI Module with power adapter and antenna	1	
14	RK95-03	Solar Power System 1x 50W/18V solar panel 1x PV controller (12V/10A) *Battery (12V/30AH) Not included as it is not convenient for interntional transportation	1	

12	600-07B	Data Logger of Automatic Weather Station LCD 7" color touch screen Storage type 48M can be available 1. Internal storage on the HMI, storage memory is very large. If set to store every 1 minute can store data for 6 months If set to store every 10 minutes can store data for approx. 5 years; Also the data can be derived by U disk 2. External storage: stored directly on the U disk, But HMI have not any internal storage, thus this way not recommended to customers. Data interface: RS232 or RS485(customized) Communication mode : Ethernet(add RS232 to ethernet converter); GPRS(add RS232 to GPRS converter),data flow consumption: <100MB/month WIFI(add RS232 to WIFI converter) Communication protocol MODBUS-RTU(Open communication protoco: the user can convenient for secondary development) Supply: 12VDC with 100-24VAC adapter, solar power supply system optional Record interval : 1min-240min adjustable Measurement parameters :32 Max. Power consumption :<5W Operating temperature: -40-+75℃ Internal protection Built-in power isolation protection HMI processor ARM RISC 528MHz	1	

General Biology Laboratory

The General Biology Laboratory is one of the primary laboratories supporting the understanding of biological interactions in the context of rapid climate change. This laboratory specializes in the study of living organisms in terms of structure, function, and diversity, with a focus on how they are affected by climate and environmental changes.

The main objectives of the laboratory:

- Study the impact of climate change on microorganisms, plants, and animals.
- Analyze changes in biodiversity resulting from rising temperatures, changing precipitation patterns, and drought.
- Monitor physiological and behavioral changes in living organisms resulting from climate change.
- Support scientific research projects related to biodiversity and climate-affected ecosystems.

Laboratory equipment	
Spectrophotometer thermos Scientific Genesys 180	

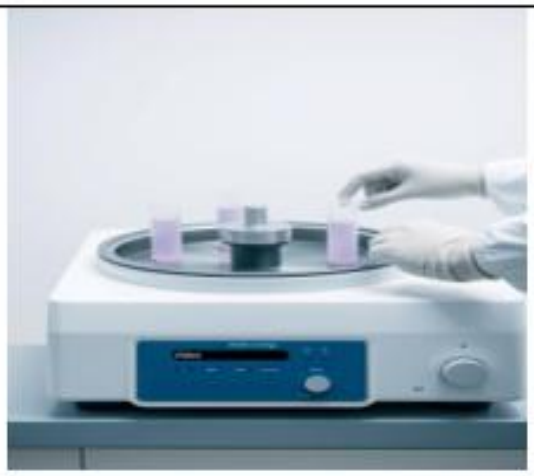
Shaker ISO LAB GmbH	
ATUMIC	

Environmental Science Laboratory

The Environmental Science Laboratory is a major scientific pillar in studying the impact of climate change on ecosystems and the interrelationships between organisms and their environments. This laboratory employs a practical approach to analyze environmental changes resulting from rising temperatures, altered precipitation patterns, desertification, and rising carbon dioxide levels.

The main objectives of the laboratory:

- Study the impact of climate change on ecosystems (terrestrial and aquatic).
- Monitor and analyze changes in biodiversity and plant diversity due to climate factors.
- Assess the ability of ecological species to adapt or migrate as a result of climate change.
- Provide sustainable environmental solutions to mitigate the effects of climate change on biological systems.

أجهزة مختبر علم البيئة	
Centrifuge ready to separate materials	
Air pollutant measuring station	
pH meter	

Soil moisture meter	
Dust concentration meter	
Humidity measuring devices for water, air and soil	

Gas concentration meter	
air flow meter	
Environmental laboratory glassware for handling chemicals	

Geoscience Laboratory

The Geoscience Laboratory is an essential academic and research facility for understanding the relationship between geological processes and climate change across different geological eras. The laboratory focuses on the study of geology, sediments, rocks, and geochemical changes, with the goal of explaining the interaction between the Earth and climate.

The main objectives of the laboratory:

- Analyzing ancient geological records (such as tree rings and sedimentary layers) to understand past climate patterns.
- Studying the impact of climate change on geological phenomena such as soil erosion, landslides, and desertification.
- Using geological models to predict the impact of climate change on the distribution of natural resources.
- Evaluating sea level change and its effects on coastal geomorphology.

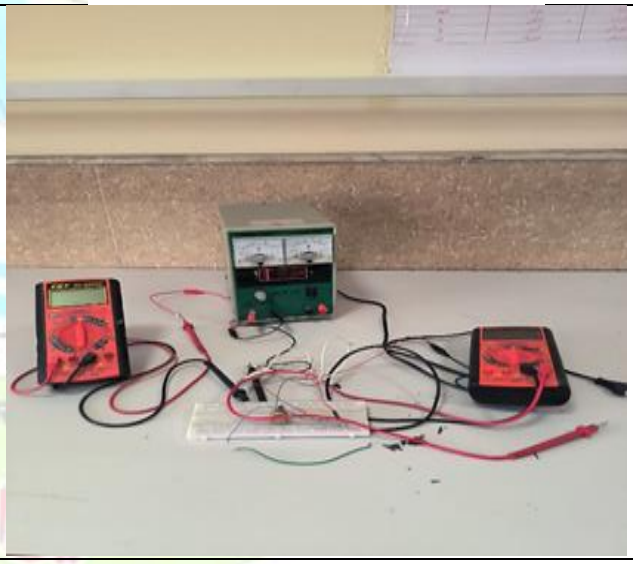
Electric Mixer MATEST	

General Physics Laboratory

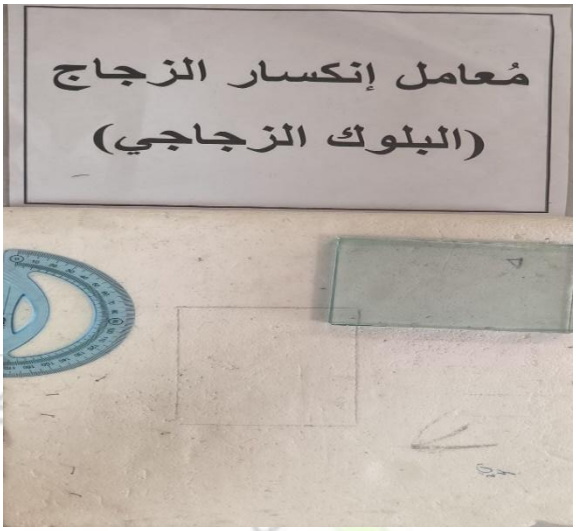
The General Physics Laboratory is a cornerstone in understanding the natural phenomena that play a direct role in climate change. It studies the physical laws governing energy transfer, atmospheric motion, solar radiation, and the thermal properties of materials. The laboratory provides a scientific and training environment that helps students and researchers understand the physical foundations of climate science.

The main objectives of the laboratory:

- Study the effect of solar radiation and thermal radiation on the Earth's climate.
- Understand the physical principles of the atmosphere, such as pressure, density, and heat transfer.
- Analyze the role of greenhouse gases in trapping heat and their impact on Earth's temperatures.
- Apply the laws of thermodynamics and optics to analyze climate phenomena.

Physics laboratory equipment	
EC & TDS OHAUS STARTER 3100C	
Ohm's law experiment	

Hooke's law experiment	
Sound speed measurement experiment	
Coefficient of friction experiment	

Glass refraction experiment	
Viscosity coefficient experiment for liquids	
Simple Pandulum	

General Chemistry Lab

The General Chemistry Lab is one of the essential laboratories that contribute to understanding and analyzing the chemical reactions that affect climate, both at the atmospheric and terrestrial levels. The lab focuses on studying the chemical compositions of gases and pollutants, the mechanisms by which they affect global warming, and the changes in the chemical composition of air, water, and soil resulting from human and climate activity.

The main objectives of the lab:

- Analyze the components of atmospheric air and study the concentrations of greenhouse gases such as carbon dioxide and methane.
- Study the chemical reactions that lead to climate phenomena such as acid rain and ozone formation.
- Measure the concentration of chemical pollutants in water and soil affected by climate change.
- Enhance the chemical understanding of human-environment interactions under changing climatic conditions.

Chemistry laboratory equipment	
OHAUS pH STARTER 2000	
Turbidity Lovibond TB 211 IR	
DO Lovibond SD 400 Oxi L	

Shaker ISO LAB GmbH	
Water Distillation LAUDA	

Sensitive Balance KERN ABS	
laboratory burette	

Computer Lab

The Computer Lab is a vital laboratory supporting modern climate studies. It is used to analyze and process massive amounts of climate data, model environmental phenomena, and support scientific research in the field of climate change through software and digital tools.

The main objectives of the lab:

- Analyze climate and environmental data using statistical and mathematical software.
- Build simulation models of future climate change based on multiple scenarios.
- Use artificial intelligence and machine learning techniques to predict potential climate disasters.
- Support graduation projects and climate research of a digital or analytical nature.
- Display and interpret climate data in an easy-to-understand visual manner.
- Track climate changes over time using time-series maps.
- Link geographic information with environmental variables such as desertification, sea-level rise, and changing rainfall patterns.
- Support environmental studies and decision-makers through accurate analytical maps.

University of Mosul / College of Engineering / Department of Computer Engineering

Subject Guide 2024-2025 / Bologna System

	Republic of Iraq - Ministry of Higher Education and Scientific Research	جمهورية العراق - وزارة التعليم العالي والبحث العلمي
	Name of University	اسم الجامعة
	Bachelor's degree in Climite Chage (First cycle)	بكالوريوس في التغييرات المناخية (الدورة الأولى)
	Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr	أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة
	Program Curriculum (2024 - 2025)	المنهاج الدراسي للعام ٢٠٢٤-٢٠٢٥

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL	USSWL	SWL	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)		hr/sem	hr/sem	hr/sem			
UGI	One	1	ENVC101	Mathematics	رياضيات		3	1			2		3	78	47	125	5.00	B	
		2	ENVC102	Introduction to climate changes	مقدمة في التغييرات المناخية		2	1	0	1	0	0	3	63	37	100	4.00	B	
		3	ENVC103	Biology	علم الاحياء العام		2	0	2	0	0	1	3	78	72	150	6.00	B	
		4	ENVC104	Introduction to Environmental Sci	مدخل الى علم البيئة		2	1	0	1	0	0	3	63	62	125	5.00	B	
		5	ENVC105	Geology	علم الأرض		2	1	2	0	0	0	3	78	72	150	6.00	B	
		6	UOM102	English I	اللغة الإنكليزية I		2	0	0	0	0	0	3	33	17	50	2.00	B	
		7	UOM104	Democracy and human rights	ديمقراطية وحقوق انسان		2	0	0	0	0	0	3	33	17	50	2.00	B	
						Total	15	4	4	2	2	1	21	426	324	750	30.00		

Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL	USSWL	SWL	ECTS	Module Type	Prerequisite Module(s) Code
						CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)		hr/sem	hr/sem	hr/sem			
Two	1	ENVC106	General Physics	الفيزياء العامة		2	0	2	2	0	0	0	3	93	82	7		
	2	ENVC107	General Chemistry	الكيمياء العامة		2	0	2	2	0	0	0	3	93	82	7		
	3	ENVC108	Cartography	علم الخرائط		2	1	2	0	0	0	0	3	78	47	5		
	4	ENVC109	Climate and biodiversity	المناخ والتنوع البايولوجي		2	0	2	0	0	1	0	3	78	72	6		
	5	UOM1031	Computer I	علم الحاسوب I		1	0	2	0	0	0	0	3	48	27	3		
	6	UOM1011	Arabic language I	اللغة العربية I		1	1	0	0	0	0	0	3	33	17	2		
					Total	10	2	10	4	0	1	0	18	423	327	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGIII	Five	1			تلوث الهواء والماء									0		0	5.00		
		2			اساسيات الاحتباس الحراري									0		0	4.00		
		3			أنظمة وأجهزة مراقبة الطقس									0		0	4.00		
		4			مراقبة وتقييم الجفاف									0		0	4.00		
		5			فيزياء تربة									0		0	4.00		
		6			تطبيقات GIS في الأرصاد الجوي									0		0	5.00		
		7			تخطيط حضري									0		0	4.00		
						Total	0	0	0	0	0	0	0	0	0	0	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
	Six	1			جيوكيمياء البيئة									0		0	6.00		
		2			تلوث تربة									0		0	5.00		
		3			ادراة المياه المعالجة واعادة الاستخدام									0		0	5.00		
		4			الامن الغذائي وتغير المناخ									0		0	4.00		
		5			التحليل والتنبؤ بالطقس									0		0	5.00		
		6			اقتصاديات الموارد الطبيعية									0		0	5.00		
						Total	0	0	0	0	0	0	0	0	0	0	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGIV	Seven	1			الطاقة المتجددة									0		0	5.00		
		2			تحسس نائي									0		0	6.00		
		3			الطقس المتطرف والكوارث الطبيعية									0		0	5.00		
		4			التخفيف والتكيف									0		0	5.00		
		5			التنمية المستدامة												5.00		
		6			مشروع تخرج									0		0	4.00		
						Total	0	0	0	0	0	0	0	0	0	0	30.0		
	Eight	1			استراتيجيات التخفيف في اثار المناخ									0		0	5.00		
		2			تقييم الاثر البيئي									0		0	5.00		
		3			القوانين والتشريعات البيئية									0		0	5.00		
		4			تغير المناخ والصحة العالمية									0		0	6.00		
		5			علم الأرصاد الجوي												5.00		
		6			مشروع تخرج									0		0	4.00		
						Total	0	0	0	0	0	0	0	0	0	0	30.0		
						Total	25	6	14	6	2	2	21	444	747	1077	240.0		Must be 240 ECTS

Note: The student should complete 4 weeks of Summer Internships to fulfil the requirements of the Bachelor's degree

Structured SWL (hr/w) type		
	CL	Class Lecture
	Lab	Laboratory
	Pr	Practical Training
	Tut	Tutorial
	Lect	Online lecture

Module type		
	B	Basic learning activities
	C	Core learning activity
	S	Suport or related learning activity
	E	Elective learning activity

SWL:	Student Workload
SSWL:	Structured SWL
USSWL:	Unstructured SWL

Research Directions - Climate Change Department

College of Environmental Sciences - University of Mosul

Research in the Climate Change Department focuses on studying the effects of global warming, developing clean energy solutions, and analyzing changes in ecosystems due to climate factors. Research directions also include combating desertification, reducing carbon emissions, and studying adaptation to extreme climate events.

College of Environmental Sciences, Department of Climate Change

This guide was prepared under the guidance of

The Honorable Dean of the College of Environmental Sciences

Professor Muthanna Jassim Al-Taie,

under the supervision of the Head of the Department

Dr. Ali Zain Al-Abidin Haider

serves as a reference for introducing the Department of Climate Change, its members and the undergraduate curriculum. For more details, contact us via email.

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