

University of Mosul جامعة الموصل



*First Cycle – Bachelor's Degree (B.Sc.) –
Environmental Sciences*

بكالوريوس – علوم بيئية / علوم بيئة



Table of Contents

1. Overview
2. Undergraduate Modules 2024-2025
3. Contact

1. Overview

This catalogue is about the courses (modules) given by the program of Environmental Sciences to gain the Bachelor of Environmental Science degree. The program delivers Modules with (6000) total student workload hours and 240 total ECTS. The module delivery is based on the Bologna Process.

نظرة عامة

يتناول هذا الدليل المواد الدراسية التي يقدمها برنامج علوم البيئة للحصول على درجة بكالوريوس علوم بيئة. يقدم البرنامج (50) مادة دراسية، على سبيل المثال، مع (٦٠٠٠) إجمالي ساعات حمل الطالب و ٢٤٠ إجمالي وحدات أوروبية. يعتمد تقديم المواد الدراسية على عملية بولونيا.

2. Undergraduate Courses 2023-2024

Semester One										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env101	General Physics	فيزياء عامة	English	3		2	78	72	150	6.00

Description

General Physics is a foundational module designed to introduce students to the core principles of classical physics. The course covers key topics such as mechanics, motion, force, energy, momentum, and the laws of thermodynamics. It aims to develop students' analytical and problem-solving skills through theoretical explanations and practical examples. Emphasis is placed on understanding physical concepts that are essential for environmental sciences, such as the behavior of matter and energy in natural systems. The module also includes laboratory experiments and tutorials to reinforce theoretical knowledge and help students develop essential scientific skills, including measurement techniques, data analysis, and interpretation of results. By the end of the course, students will have a solid understanding of physical principles and be prepared to apply this knowledge in more advanced scientific and environmental contexts.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env102	General Biology	علم الاحياء	English	3	1	2	93	72	165	6.60

Description

General Biology introduces students to the fundamental principles of life sciences, focusing on the structure, function, and diversity of living organisms. The course covers essential topics such as cell biology, genetics, evolution, and ecology. Students will explore how organisms grow, reproduce, and interact with their environments, with an emphasis on biological systems relevant to environmental studies. Through lectures and practical sessions, students develop skills in observation, data collection, and critical analysis. This module lays the groundwork for understanding complex biological processes and prepares students for advanced topics in ecology, environmental biology, and biotechnology.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env103	General Geology	علم الارض	Arabic	2		2	63	72	135	5.40

Description

General Geology provides students with a comprehensive introduction to the Earth's structure, materials, and dynamic processes. The module covers key geological concepts including the rock cycle, plate tectonics, minerals, soil formation, and the processes of weathering and erosion.

Students learn to identify common rocks and minerals and understand their formation and transformation over geological time. The course also explores natural hazards such as earthquakes and volcanoes, and their implications for the environment and human society. Laboratory sessions complement lectures by offering hands-on experience with geological specimens and tools. By the end of the module, students will gain foundational knowledge crucial for understanding Earth systems and the environmental impact of geological processes—essential for further study in environmental science, resource management, and geotechnical applications.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Env104	Organic Chemistry	كيمياء عضوية	Arabic	3	1	2	93	72	165	6.60

Description

Organic Chemistry introduces students to the structure, properties, reactions, and synthesis of organic compounds. The course emphasizes the chemistry of carbon-containing molecules, including hydrocarbons, alcohols, carboxylic acids, esters, and biomolecules such as proteins and carbohydrates. Students will learn about functional groups, reaction mechanisms, isomerism, and the role of organic chemistry in biological systems and environmental processes. Practical laboratory sessions are integrated to reinforce theoretical knowledge through hands-on experiments, such as synthesis and purification techniques, qualitative analysis, and spectroscopic methods. This module provides a crucial foundation for understanding the chemical basis of life and environmental interactions, supporting further study in biochemistry, environmental toxicology, and industrial applications. By the end of the course, students will be equipped to analyze organic substances and understand their behavior in both natural and engineered environments.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Uom105	Arabic Language	اللغة العربية	Arabic	2			33	72	105	4.20

Description

Arabic Language focuses on developing students' proficiency in reading, writing, and speaking Modern Standard Arabic. The course emphasizes grammar, vocabulary building, and effective communication skills. Through a variety of texts and exercises, students enhance their understanding

of Arabic structure and expression. This module also fosters appreciation of Arabic as a tool for academic and professional communication, especially in environmental and scientific contexts.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Uom106	Freedom and Democracy	حرية وديمقراطية	Arabic	2			33	72	105	4.20

Description

Freedom and Democracy explores the fundamental concepts of political freedom, human rights, and democratic governance. The module examines the historical development of democratic systems, key political philosophies, and the role of civic participation in shaping just societies. Students will engage in discussions about constitutional principles, civil liberties, and global democratic movements. The course encourages critical thinking and informed citizenship in both national and international contexts.

Semester Two

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env107	Biostatistics	احصاء حيائي	English	2		2	78	72	150	6.00

Description

Biostatistics introduces students to statistical methods used in the analysis of biological and environmental data. Topics include data types, descriptive statistics, probability, hypothesis testing, and regression analysis. Emphasis is placed on applying statistical tools to real-world

scientific problems. Through lectures and practical exercises, students gain skills in data interpretation and decision-making, essential for research and evidence-based practice in environmental and life sciences.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Env108	Analytical Chemistry	كيمياء تحليلية	Arabic	3	1	2	93	82	175	7.00

Description

Analytical Chemistry focuses on the techniques and principles used to identify and quantify matter. The module covers classical methods such as titration and gravimetric analysis, as well as modern instrumental techniques including spectrophotometry, chromatography, and electrochemical analysis. Emphasis is placed on accuracy, precision, and the interpretation of chemical data. Laboratory sessions provide hands-on experience in sample preparation, calibration, and data evaluation. This course equips students with the essential skills to analyze chemical substances in environmental samples, supporting fields such as pollution control, water quality testing, and toxicology. By the end of the module, students will understand how to select and apply appropriate analytical methods to solve practical and research problems in environmental

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Env109	Soil Science	علم التربة	Arabic	2		2	63	37	100	5.00

Description

Soil science is the study of soil as a natural resource. It examines soil formation, classification, and mapping. The field explores soil properties like texture, structure, and fertility. Soil science helps understand nutrient cycling, water retention, and erosion. It is essential for agriculture, environmental management, and land use planning. Studying soil supports sustainable farming and ecosystem health by improving soil conservation and productivity.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
-------------	------------------------	---------------------	----------	-----------	-------------	------------	-------------	---------------	------------	------

Env110	Ecology	علم البيئة	Arabic	2		2	63	87	150	7.00
Description										
Ecology is the study of interactions between living organisms and their environment. It explores how plants, animals, and microorganisms relate to each other and to physical surroundings like air, water, and soil. Ecology helps us understand ecosystems, biodiversity, energy flow, and nutrient cycles. It is crucial for conservation, managing natural resources, and addressing environmental issues such as pollution and climate change.										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Uom111	English Language	اللغة الانكليزية	English	2			48	52	100	2.00
Description										
English language is a widely spoken global language used for communication, education, and business. It has a rich vocabulary and complex grammar rules. English evolves with influences from many cultures and languages. It serves as a common medium for international dialogue, literature, and media. Learning English enhances opportunities for travel, work, and access to information worldwide.										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Uom112	Computer	حاسبات	Arabic	1		1	33	42	75	3.00
Description										
A computer is an electronic device that processes data and performs tasks according to instructions called programs. It consists of hardware components like the processor, memory, and storage. Computers are used for computing, communication, data management, and entertainment. They play a vital role in modern life, supporting fields like science, business, education, and technology development.										

Semester Three										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env201	Genetics	علم الوراثة	English	2		2	63	62	125	5.00
Description										
<p>Genetics in environmental sciences studies how genetic variation in organisms affects ecosystems and environmental health. It examines gene-environment interactions, biodiversity, and adaptation to changing conditions. This field helps understand species evolution, conservation genetics, and the impact of pollutants on genetic material. By analyzing genetic information, environmental scientists develop strategies for preserving endangered species and maintaining ecosystem resilience, contributing to sustainable environmental management and biodiversity protection.</p>										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env202	Plant Environment	بيئة نبات	Arabic	2	1	2	78	72	150	5.00
Description										
<p>Plant environment refers to all the external factors that influence plant growth and development. These include light, temperature, water, soil nutrients, air quality, and climate conditions. The interaction between plants and their environment affects photosynthesis, nutrient uptake, and overall health. Understanding the plant environment helps in agriculture, horticulture, and ecosystem management by optimizing conditions for plant survival and productivity.</p>										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env203	Environmental Geology	جيولوجيا بيئية	Arabic	1	1	2	63	62	125	4.00

Description

Environmental geology is the study of how geological processes and materials affect the environment and human activities. It examines soil, rocks, water, and natural hazards like earthquakes and landslides. This field helps assess environmental risks, manage natural resources, and plan land use to minimize environmental damage. Environmental geology supports sustainable development by addressing issues such as pollution, waste disposal, and groundwater protection.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env204	Pollution Fundamentals	اساسيات التلوث	Arabic	3		2	78	72	150	5.00

Description

Pollution fundamentals involve understanding the sources, types, and effects of contaminants in air, water, and soil. Pollution can be caused by industrial activities, agriculture, vehicles, and waste disposal. It harms ecosystems, human health, and natural resources. Studying pollution fundamentals helps identify pollutants, their pathways, and control measures. This knowledge is essential for developing strategies to prevent, reduce, and manage pollution for a healthier environment.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env205	Environmental Chemistry	كيمياء بيئية	Arabic	2	1	3	93	57	150	5.00

Description

Environmental chemistry studies the chemical processes occurring in the environment, including air, water, and soil. It focuses on the sources, reactions, transport, and effects of chemical substances, both natural and human-made. This field helps understand pollution, chemical cycles, and contaminant behavior. Environmental chemistry is vital for monitoring environmental quality, assessing risks, and developing methods to reduce pollution and protect ecosystems and human health.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env206	Environmental Legislation and Law	انظمة وقوانين بيئية	Arabic	2			33	17	50	2.00

Description

Environmental legislation and law involve the rules and regulations designed to protect the environment and promote sustainable development. These laws govern pollution control, natural resource management, waste disposal, and conservation. They ensure accountability for environmental damage and support enforcement through legal systems. Understanding environmental law helps guide policy, promote public health, and protect ecosystems. It is essential for addressing global challenges like climate change and biodiversity loss.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env207	Arabic language	لغة عربية	Arabic	2			33	17	50	2.00

Description

Arabic Language builds on basic language skills to develop intermediate proficiency in reading, writing, listening, and speaking. It focuses on expanding vocabulary, improving grammar, and understanding more complex sentence structures. Students practice conversation, reading short texts, and writing paragraphs. The course also introduces cultural aspects of Arabic-speaking countries. Level Two aims to enhance communication skills and comprehension for everyday and academic use.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
-------------	------------------------	---------------------	----------	-----------	-------------	------------	-------------	--------------	------------	------

Env208	A I Baath party crimes	جرائم حزب البعث	Arabic	2		33	17	50	2.00
--------	------------------------	-----------------	--------	---	--	----	----	----	------

Description

The Ba'ath Party, especially under Saddam Hussein in Iraq and the Assad regime in Syria, committed severe human rights violations. Crimes included mass killings, such as the Anfal campaign and Halabja chemical attack, torture, political repression, and the 1982 Hama massacre. The regimes targeted ethnic and political groups, using violence, forced displacement, and chemical weapons. These acts are widely recognized as crimes against humanity by international human rights organizations.

Semester Four											
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env207	Microbial Environment	بيئة احياء مجهرية	English	2		2	3	63	62	125	5.00
Description											
<p>The microbial environment refers to the diverse community of microorganisms—bacteria, fungi, viruses, and protozoa—present in natural habitats like soil, water, air, and living organisms. These microbes play essential roles in nutrient cycling, decomposition, and maintaining ecosystem balance. They can be beneficial, such as in waste treatment and agriculture, or harmful as pathogens. Understanding microbial environments helps in managing health, agriculture, and environmental sustainability through microbial monitoring and applications.</p>											

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env208	Plant Taxonomy	تصنيف نبات	Arabic	2	1	2	3	78	72	150	6.00
Description											
<p>Plant taxonomy is the science of identifying, naming, and classifying plants based on their characteristics and evolutionary relationships. It organizes plants into hierarchical groups such as species, genus, family, and order. This field helps understand plant diversity, evolution, and relationships among species. Plant taxonomy is essential for conservation, agriculture, and environmental studies, providing a framework for studying and managing plant life in various ecosystems around the world.</p>											
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env209	Biochemistry	كيمياء حياتية	Arabic	2		2	3	63	37	100	4.00
Description											
<p>Biochemistry is the study of the chemical processes and substances that occur within living organisms. It focuses on molecules like proteins, carbohydrates, lipids, and nucleic acids, and how they interact to support life. Biochemistry explains how cells function, grow, and respond to their environment. It is essential in medicine, genetics, agriculture, and environmental science, helping to develop treatments, improve crops, and understand biological systems at the molecular level.</p>											
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env210	Climatology	علم المناخ	Arabic	3			3	48	52	100	4.00

Description											
Climatology is the scientific study of climate, including long-term weather patterns and trends across different regions and time periods. It examines temperature, precipitation, wind, and atmospheric conditions to understand climate systems and changes. Climatology is essential for predicting weather, analyzing climate change, and managing natural resources. It supports environmental planning, agriculture, and disaster preparedness by helping to assess risks related to droughts, floods, and other climate-related events.											
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env211	Animals Taxonomy	تصنيف حيوان	Arabic	2		2	3	52	48	100	4.00
Description											
Animal taxonomy is the science of classifying and naming animals based on their physical characteristics, genetic relationships, and evolutionary history. It organizes animals into hierarchical groups such as kingdom, phylum, class, order, family, genus, and species. This classification helps scientists understand biodiversity, evolutionary connections, and ecological roles. Animal taxonomy is essential for conservation, research, and environmental management by providing a systematic way to identify and study animal species worldwide.											
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env212	Environmental Impact Assessment	تقييم الاثر البيئي	Arabic	2	1		3	48	27	75	3.00
Description											
Environmental Impact Assessment (EIA) is a process used to evaluate the potential environmental effects of a proposed project before it is carried out. It assesses impacts on air, water, soil, biodiversity, and human health. The goal is to prevent or minimize environmental harm through											

planning and decision-making. EIA helps identify risks, engage stakeholders, and develop mitigation strategies, promoting sustainable development and responsible use of natural resources.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env213	English Language	اللغة الانكليزية	English	2			3	33	17	50	2.00

Description

English language course as part of the Environmental Sciences department curriculum. The course focused on improving scientific writing, reading comprehension, and communication skills relevant to environmental topics. It helped me understand academic texts, write clear reports, and present research findings effectively. I scored 70 in the course, reflecting my solid understanding and ability to use English in scientific contexts. This course enhanced my academic and professional language skills.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env214	Computer	حاسبات	Arabic	1		1	3	33	42	75	3.00

Description

A computer is an electronic device that processes data and performs tasks based on instructions called programs. It includes hardware components like the processor, memory, and storage. Computers are used for communication, data management, calculations, and entertainment. They play a vital role in various fields such as education, business, science, and technology, enabling faster and more efficient work and problem-solving.

Semester Five											
Module Cod	Module Name in English	اسم المادة	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	em	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env301	Air pollution	تلوث هواء	English	2		2	3	78	47	125	5.00
Description											
<p>Air pollution is the presence of harmful substances in the air that can affect human health, animals, plants, and the environment. Common pollutants include carbon monoxide, sulfur dioxide, nitrogen oxides, particulate matter, and volatile organic compounds. Sources include vehicle emissions, industrial activities, and burning fossil fuels. Air pollution can cause respiratory problems, climate change, and acid rain. Controlling emissions and promoting clean energy are key to reducing air pollution.</p>											
Module Cod	Module Name in English	اسم المادة	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	em	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env302	Aquatic Ecology	بيئة مائية	Arabic	2	1	2	3	78	72	150	6.00
Description											
<p>Aquatic ecology is the study of ecosystems in water environments, including rivers, lakes, oceans, and wetlands. It focuses on the relationships between aquatic organisms—such as fish, algae, and microorganisms—and their physical, chemical, and biological surroundings. Aquatic ecology helps understand food webs, nutrient cycling, and water quality. It is essential for managing water resources, conserving biodiversity, and addressing environmental issues like pollution and habitat loss in aquatic systems.</p>											

Module Cod	Module Name in English	اسم المادة	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	em	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env303	Animal Ecology	بيئة حيوان	Arabic	2	1	2	3	78	72	150	6.00

Description

Animal ecology is the study of how animals interact with each other and with their environment. It examines animal behavior, population dynamics, food chains, and habitats. This field helps understand how animals adapt to changes, compete for resources, and maintain ecological balance. Animal ecology is essential for wildlife conservation, ecosystem management, and understanding the impact of human activities on animal populations and biodiversity.

Module Cod	Module Name in English	اسم المادة	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	em	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env304	Biodiversity	تنوع حيائي	Arabic	2	1	2	3	78	72	150	6.00

Description

Biodiversity refers to the variety of life on Earth, including the diversity of species, ecosystems, and genetic differences within organisms. It supports ecosystem stability, productivity, and resilience. Biodiversity provides essential services such as food, medicine, clean air, and water. It plays a crucial role in climate regulation and nutrient cycling. Protecting biodiversity is vital for maintaining healthy ecosystems and ensuring the well-being of all living organisms, including humans.

Module Cod	Module Name in English	اسم المادة	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	em	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env305	Ecological Physiology	فسلجة بيئية	Arabic	2		2	3	63	62	125	5.00

Description

Ecological physiology, also known as environmental physiology, studies how organisms adapt their physical and biological functions to environmental conditions. It examines how temperature, humidity, light, oxygen, and other factors affect metabolism, reproduction, and survival. This field links physiology with ecology to understand how species respond to environmental stress and change. Ecological physiology is important for conservation, predicting climate change impacts, and managing wildlife and ecosystems effectively.

Module Cod	Module Name in English	اسم المادة	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	em	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env306	Environmental Technology	تقنيات بيئية	Arabic	1		1	3	33	17	50	2.00

Description

Environmental technology involves the development and application of tools, systems, and techniques to protect the environment and promote sustainability. It includes technologies for pollution control, waste management, renewable energy, water purification, and environmental monitoring. These innovations help reduce environmental impact, conserve resources, and support cleaner production. Environmental technology plays a key role in addressing climate change, improving public health, and achieving sustainable development goals.

Semester Six										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL	SWL hr/sem	ECTS
Env307	Molecular Biology	بيولوجي جزيئي	English	2		2	63	27	90	3.60
Description										
Molecular biology is the study of biological processes at the molecular level, focusing on DNA, RNA, and proteins. It explores how genetic information is stored, replicated, and expressed within cells. Molecular biology helps understand cell function, gene regulation, and mutations. It is essential in fields like medicine, genetics, biotechnology, and environmental science, aiding in disease research, genetic engineering, and the development of new treatments and diagnostic tools										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL	SWL hr/sem	ECTS
Env308	Water Pollution	تلوث مياه	Arabic	2	1	2	78	72	150	6.00
Description										
Water pollution is the contamination of water bodies such as rivers, lakes, and oceans by harmful substances. Common pollutants include chemicals, sewage, plastics, heavy metals, and agricultural runoff. It affects aquatic life, disrupts ecosystems, and poses serious health risks to humans. Water pollution reduces water quality, making it unsafe for drinking, fishing, and recreation. Preventing water pollution involves proper waste management, pollution control laws, and sustainable water use practices.										

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL	SWL hr/sem	ECTS
Env309	Insects	حشرات	Arabic	2	1	2	78	72	150	6.00
Description										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL	SWL hr/sem	ECTS
Env310	Soil pollution	تلوث تربة	Arabic	2	1	2	78	72	150	6.00
Description										
<p>Insects are the largest group of animals on Earth, belonging to the class Insecta. They have three main body parts: head, thorax, and abdomen, with six legs and usually wings. Insects play vital roles in ecosystems as pollinators, decomposers, and a food source for other animals. Some insects are beneficial, while others can be pests or disease carriers. Studying insects helps in agriculture, environmental management, and biodiversity conservation.</p>										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL	SWL hr/sem	ECTS
Env311	phycology	طحالب	Arabic	2	1	2	78	47	125	5.00
Description										
<p>Phycology, also known as algology, is the scientific study of algae—a diverse group of photosynthetic organisms found in aquatic and moist environments. Algae range from microscopic phytoplankton to large seaweeds. Phycology explores their classification, biology,</p>										

ecological roles, and uses. Algae are vital for oxygen production, carbon dioxide absorption, and as a base in aquatic food chains. They also have applications in biofuel, food, medicine, and environmental monitoring.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL	SWL hr/sem	ECTS
Env312	Radioactive Pollution	تلوث اشعاعي	Arabic	2			33	52	85	3.40

Description

Radioactive pollution is the presence of radioactive substances in the environment, resulting from nuclear power plants, medical waste, and nuclear weapons testing. These pollutants release harmful radiation that can damage living tissues, cause genetic mutations, and lead to cancer. Radioactive materials persist for long periods, contaminating air, water, and soil. Proper disposal, strict regulations, and monitoring are essential to minimize exposure and protect human health and the environment from radioactive contamination.

Semester Seven

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env401	Graduation project	مشروع التخرج	Arabic				78	97	175	7.00

Description

The graduation project is a comprehensive research or practical assignment completed in the final year of study. It allows students to apply theoretical knowledge to real-world problems within their field. The project involves topic selection, proposal writing, data collection, analysis,

and final presentation. It enhances research, problem-solving, and communication skills. Successfully completing the project demonstrates a student's readiness for professional work or advanced academic study in their chosen discipline.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env402	Sustainable Development	تنمية مستدامة	Arabic	3	2		78	97	175	7.00

Description

Sustainable development is a strategy for meeting present needs without compromising the ability of future generations to meet theirs. It balances environmental protection, economic growth, and social equity. This approach promotes responsible use of natural resources, renewable energy, and waste reduction. Sustainable development encourages long-term planning and global cooperation to address issues like climate change, poverty, and biodiversity loss, ensuring a healthier planet and improved quality of life for all.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env403	Remote Sensing	تحسس نائي	Arabic	3	2		78	72	150	6.00

Description

Remote sensing is the science of collecting information about the Earth's surface without direct contact, typically using satellites, drones, or aircraft. It captures data through sensors that detect reflected or emitted radiation. This technology is widely used in environmental monitoring, agriculture, urban planning, and disaster management. Remote sensing helps track changes in land use, vegetation, water bodies, and climate, providing valuable insights for sustainable development and resource management.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
-------------	------------------------	---------------------	----------	-----------	-------------	------------	-------------	--------------	------------	------

Env404	Environmental Health	صحة بيئية	English	2			48	77	125	5.00
Description										
Environmental health focuses on the relationship between the environment and human health. It involves identifying and controlling factors like air and water pollution, chemical exposure, waste management, and climate change that can harm health. The goal is to create safe environments that promote well-being. By monitoring risks and promoting policies, environmental health professionals work to prevent disease and improve quality of life through clean air, safe water, and healthy living conditions.										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS
Env405	Renewable Energy	طاقة متجددة	Arabic	3	1		63	62	125	5.00
Description										
Renewable energy comes from natural sources that are constantly replenished, such as sunlight, wind, water, and geothermal heat. Unlike fossil fuels, renewable energy produces little or no greenhouse gas emissions, making it a key solution to climate change. It supports sustainable development by reducing environmental impact, improving energy security, and creating green jobs. Investing in renewable energy helps ensure a cleaner, healthier, and more sustainable future for people and the planet.										

Semester eighth										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSW L hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Env407	Graduation project	مشروع التخرج	Arabic				78	97	175	7.00
Description										
The graduation project is a comprehensive research or practical assignment completed in the final year of study. It allows students to apply theoretical knowledge to real-world problems within their field. The project involves topic selection, proposal writing, data collection, analysis, and final presentation. It enhances research, problem-solving, and communication skills. Successfully completing the project demonstrates a student's readiness for professional work or advanced academic study in their chosen discipline.										
Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSW L hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Env408	Green Chemistry	كيمياء خضراء	Arabic	2	1	2	78	97	175	7.00
Description										

Green chemistry is the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances. It promotes sustainability by minimizing environmental impact, improving energy efficiency, and using renewable resources. Green chemistry encourages safer production methods, less toxic materials, and waste prevention. It plays a vital role in protecting human health and the environment while supporting innovation in industries like pharmaceuticals, agriculture, and manufacturing.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSW L hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Env409	Epidemiology	علم الاوبئة	English	2	1		78	72	150	6.00

Epidemiology is the study of how diseases spread, their causes, and how they can be controlled in populations. It helps identify risk factors, track outbreaks, and guide public health policies. By analyzing data and patterns, epidemiologists work to prevent illness and improve health outcomes. This field is essential in managing infectious diseases, chronic conditions, and environmental health issues, playing a key role in safeguarding community and global health.

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSW L hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Env410	Planning and Environmental Management	تخطيط وإدارة بيئية	Arabic	2	1		48	77	125	5.00

Module Code	Module Name in English	اسم المادة الدراسية	Language	CL (hr/w)	Lect (hr/w)	Lab (hr/w)	SSW L hr/sem	USSW L hr/sem	SWL hr/sem	ECTS
Env411	Toxicology	علم السموم البيئي	Arabic	2		2	63	62	125	5.00
Description										
Planning and environmental management involve the strategic use of land, resources, and policies to promote sustainable development while protecting natural ecosystems. It integrates environmental science, urban planning, and policy-making to minimize environmental impact, manage risks, and ensure responsible resource use. This approach supports balanced growth, conservation, and community well-being. Effective planning and management are essential for addressing climate change, pollution, and biodiversity loss in both urban and rural areas.										

Contact

Program Manager:

Pro. Dr. Mohammad Ibrahim Khalil | Ph.D. in

Email: mohammadibrahim@uomosul.edu.i1

Mobile no.: 07740856094



Biology | Professor



Program Coordinator:

Bilal Salim Dawood MSc. in Biology | Lecturer

Email: bilalaltaei@uomosul.edu.iq

Mobile no.: 07735492573