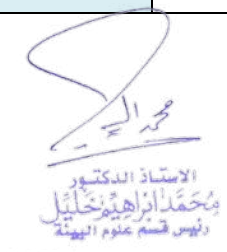
MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Biology			**Module Delivery**	
Module Type	B			☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**Env102**				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level			**Semester of Delivery**		
Administering Department	Env. Science		**College**	Environmental Sciences University	
Module Leader	Mishaal ali mohammed		**e-mail**	mishaalalanziy@uomosul.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**		
Module Tutor	**Bilal Salim Al-Taie**		**e-mail**	**bilalaltaei@uomosul.edu.iq**	
Peer Reviewer Name	Lecturer		**e-mail**		
Scientific Committee Approval Date	2024-2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module	None	**Semester**	



Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Communicate an idea of environmental biology to zoology, animal and plant tissues and plant tissues. 2. Highlighting the importance of the functions performed by the plant in the environment. 3. Highlight animal behavior in the environment. 4. Give an idea of the geographical distribution of plants and animals in the environment
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Acquire knowledge about the plant and its most important function, which is the process of photosynthesis. 2. Acquire knowledge about zoology and the behavior of animals in the environment in which they are located 3. Learn the geographical distribution of animals and plants in the environment
Indicative Contents المحتويات الإرشادية	1. Introduction to Biology and Botany for Botany with Plant Tissue (3 hours) 2. Plant organs and their importance roots, stems and leaves (3 hours) 3. Leaf function (photosynthesis) Triple Carbon Plants and Tetracarbon Plants (3 hours) 4. Factors affecting photosynthesis and plant respiration (3 hours) 5. Imprebation, transpiration and tearing (3 hours) 5.Plant and drought (3 hours) 6. Plant movements and geographical distribution of plants (3 hours) 7 Semester Exam 8. Introduction to Zoology (3 hours) 9. Animal tissue (3 hours) 10 . Human body organs and function (3 hours) 11. Animal behavior in the environment 12. Types of behavior, innate and acquired and learning ..... (3 hours). 13 Patterns of Innate Behavior and. Characteristics of Innate Behavior (3 hours) 14. Factors Affecting Innate Behavior, Natural Selection and Behavior (3hrs) 15. Geographical distribution of animals. (3 hours) 16 . Final Exam (3 hours)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Clarifying the importance of plants in the environment by withdrawing CO2 and subtracting O2 2. Knowledge of animal behavior and its role in the ecological balance and sustainability of the food chain 3. Linking theoretical ideas with practical experiments to clarify some of the processes in the importance of photosynthesis and plant respiration 4. Illustrate animal behavior with videos in a scientific style

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	95	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	80	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	14
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10%(10)	4,9	3,7,10
	Assignments	2	10%(10)	2,12	8
	Projects / Lab.	1	10%(10)	Continuous	All
	Report	1	10%(10)	11	2
Summative assessment	**Midterm Exam**	2h	10%(10)	7	1-4
	Final Exam	2h	50%(50)	16	All
Total assessment			100% (100 Marks)	All	

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction to Biology** **Characteristics of living organisms and branches of biology**
Week 2	**Introduction to Botany, Plant Tissues, Plant Organs and Their Functions**
Week 3	**Photosynthesis** **Stages of photosynthesis**
Week 4	**Factors affecting photosynthesis and plant respiration**
Week 5	**Plant movements transpiration, tears and imbibing in the plant**

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Week 6	**Effects of environmental factors and drought on plants**
Week 7	**Half course exam**
Week 8	**Introduction to Zoology and Animal Histology**
Week 9	**Body organs and functions**
Week 10	**Behavior of animals in the environment**
Week 11	**Types of behavior, Factors affecting animal behavior**
Week 12	**Innate behavior**
Week 13	**Jealousy animal instinct in animal societies**
Week 14	**Social behavior, intelligence and behavior regulation**
Week 15	**Geographical distribution of animals and plants in the globe**
Week 16	**End of course exam**

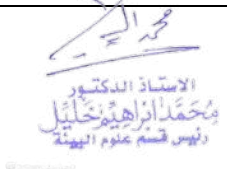
Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Biology Lap requirements
Week 2	Plant Tissues Slides
Week 3	Preparation of plant tissue slide
Week 4	Plant organelles
Week 5	Experiment with imbibing
Week 6	Experiment on photosynthesis
Week 7	Samples of animals cells
Week 8	Organelles and it's functions
Week 9	Kinds of epithelium tissues

Week 10	Glands and kinds of ductal glands
Week 11	Kinds of secretions
Week 12	Connective tissues
Week 13	Muscular tissues
Week 14	Components of nerves tissues
Week 15	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		
Recommended Texts		
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

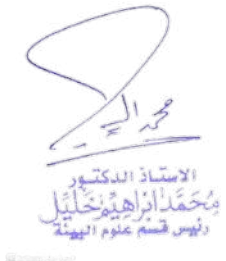


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Genetics			**Module Delivery**	
Module Type				☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code					
ECTS Credits	158				
SWL (hr/sem)					
Module Level		**Semester of Delivery**		FIRST	
Administering Department		**College**		Environmental Sciences University	
Module Leader		**e-mail**			
Module Leader's Acad. Title		**Module Leader's Qualification**		Prof	
Module Tutor	Mohammad Ibrahim Khalil	**e-mail**		mohammadibrahim@uomosul.edu.iq	
Peer Reviewer Name		**e-mail**			
Scientific Committee Approval Date	2024-2025	**Version Number**			

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	



Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	.1Understand the basic concepts of genetics, including genes, chromosomes, mutations, and inheritance patterns. .2Interpret Mendel's laws of heredity and apply them to various examples to understand how hereditary traits are transmitted. .3Analyze heredity patterns and identify dominant and recessive traits, and sex-linked inheritance. .4Explain the mechanisms of hereditary trait transmission at the cellular and organismal levels. .5Acquire analytical skills through the use of tools such as Punnett squares and pedigree charts. .6Learn about modern applications of genetics, such as genetic engineering techniques, understanding the structure and function of DNA, and gene editing techniques. .7Link genetic concepts to public health by studying genetic diseases, their diagnosis, and prevention.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	.1Define the basic concepts of genetics clearly and precisely. .2Solve genetic problems using Mendel's laws. .3Interpret inheritance patterns in family pedigrees. .4Distinguish sex-linked inheritance patterns. .5Describe the structure and function of DNA and the mechanisms of genetic mutation. .6Discuss the role of heredity in the development of hereditary diseases. .7Apply genetic knowledge to analyze life or medical problems.
Indicative Contents المحتويات الإرشادية	.**1**Genetics and Environment in Genetic Interaction •Explain that genetic traits are not solely determined by genes, but are also influenced by the environment (such as the effect of nutrition, climate, and external stimuli on height or skin color.(•Environmental examples: variations in animal fur color depending on the environment (desert versus ice), or changes in plant growth depending on soil and climate. .2Genetic Diversity and Environmental Conservation •Explain the role of genetic diversity in maintaining ecological balance and disease resistance of organisms. •The importance of nature reserves and gene banks in preserving endangered species. •Examples: the impact of loss of genetic diversity on crop production or resistance to plant diseases. .3Genetics and Food Security •Link genetics to improving the quality of agricultural crops and their tolerance to harsh environmental conditions (such as drought, saline soil.(

	•Address genetic engineering as a means of combating climate change by producing heat- or pest-resistant varieties. .4Genetics and Environmental Pollutants •Explain how chemicals and pollutants can lead to genetic mutations in humans and animals. •Examples: the effects of exposure to radiation or heavy metals on DNA. .5Applications of Genetics in Environmental Protection •Use of genetically modified organisms to clean up the environment (such as bacteria used to degrade oil or industrial waste.(•Use of genetics to monitor and control invasive species. .6Genetic Education for Natural Resources Protection •Promote responsible environmental behavior by understanding the impact of genetics on human and animal health. •Support genetic awareness programs in rural and environmentally sensitive communities.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	.1Active Learning •Engage students in interactive classroom activities, such as solving genetic problems, role-playing (e.g., simulating trait transmission), and discussing real genetic cases. •Aims to increase comprehension and analysis. .2Cooperative Learning •Divide students into groups to complete group activities, such as preparing a family tree or studying a specific genetic disease. •Aims to enhance teamwork skills and mutual respect. .3Problem-Based Learning •Present real-life genetic or medical problems that students are asked to analyze using genetic concepts. •Example: studying a genetic case in a family and analyzing its inheritance pattern. .4Project-Based Learning •Assign students to prepare a mini-research project on a topic such as "Genetic Engineering in Agriculture" or "Genetic Diseases in My Community". •Aims to integrate knowledge with research and presentation skills. .5E-Learning/Blended Learning •Use multimedia (videos, simulations, genetics applications) to explain complex concepts such as gene duplication or mutation. •Educational platforms can be used to track assessments and activities.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**				
	Assignments				
	Projects / Lab.				
	Report				
Summative assessment	**Midterm Exam**				
	Final Exam				
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Environmental Genetics
Week 2	Genetic Material and Genes
Week 3	Mendelian and Non-Mendelian Inheritance
Week 4	Environmental Influence on Gene Expression
Week 5	Genetic Changes Induced by Environmental Factors
Week 6	Quantitative Genetics
Week 7	التغاير الوراثي داخل المجتمعات البيئية
Week 8	Genetics and Environmental Stresse
Week 9	**امتحان نصف الكورس النظري(Midterm)**

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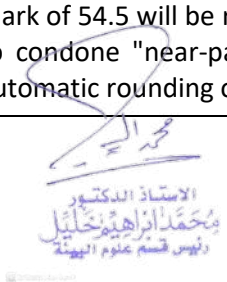
Week 10	Genetic Adaptation in Ecological Species
Week 11	Epigenetics
Week 12	Case Study 1 Real-life examples: Plants resistant to pollutants, animals in extreme environments
Week 13	Case Study 2 Changes in species traits due to climate change
Week 14	**Final Review and Theory Exam** Review session, discussions, final exam
Week 15	**Final Review and Theory Exam** Review session, discussions, final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to the laboratory
Week 2	Laboratory equipment and tools used
Week 3	Methods of expressing concentrations of chemical solutions and related calculations
Week 4	Methods for cell and tissue disruption
Week 5	Principles of DNA and RNA extraction
Week 6	Types of extraction from blood, bacteria, and plants
Week 7	Plant DNA extraction
Week 8	Home-based DNA extraction (e.g., strawberry)
Week 9	Measuring the concentration and purity of extracted nucleic acids
Week 10	Gel electrophoresis
Week 11	Exam
Week 12	PCR and its types
Week 13	Analysis of sequencing results
Week 14	Examples
Week 15	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		
Recommended Texts	Molecular Biology of the Gene", Molecular Genetics of Bacteria, Human Molecular Genetics	
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A –** Excellent	**Excellent**	90 - 100	Outstanding Performance
	B - Very Good	**Very Good**	80 - 89	Above average with some errors
	C – Good	**Good**	70 - 79	Sound work with notable errors
	D – Satisfactory	**Fair/Satisfactory**	60 - 69	Fair but with major shortcomings
	E – Sufficient	**Pass/Acceptable**	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	**Fail-Under Review/Pending Review**	(45-49)	More work required but credit awarded
	F – Fail	**Fail**	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Computer			**Module Delivery**	
Module Type	S			☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	Uom112				
ECTS Credits	**3.00**				
SWL (hr/sem)	**75**				
Module Level	Two		**Semester of Delivery**	FIRST	
Administering Department	Environmenal Science		**College**	Environmenal Science and Technologies	
Module Leader	Fanar Naif Jardow		**e-mail**	Fnr.neif@uomosul.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**	MSc. In Computational mathmatics	
Module Tutor	Fnr neif		**e-mail**	fnr.neif@uomosul.edu.iq	
Peer Reviewer Name	Doaa Ziyad		**e-mail**		
Scientific Committee Approval Date	2024-2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	nil	**Semester**	
Co-requisites module	nil	**Semester**	Second

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. The ultimate beginner's guide to learning basic computer skills. 2. Make the student familiar with basic computing skills 3. Shows you everything a student needs to know about the Microsoft Office Master 4. Guide the student step by step through the most important concepts and skills needed to be computer proficient 5. Get to know the actual physical machine 6. The student will learn how to navigate Windows 10, how to access and navigate the Internet, and how to stay in touch with email. 7. Introducing the student to Microsoft Office 2013, which helps him create documents in Word, spreadsheets in Excel, and presentations in PowerPoint. 8. The student will learn how to maintain the security of information through special instructions on security and privacy.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understand the basics of how a computer works. 2. Learn how to work with Windows 10 3. Create documents, spreadsheets, and presentations. 4. Email, surf the web, and keep your data safe. 5. Through clear explanations and step-by-step instructions, you will help the student understand the basics of computing.
Indicative Contents المحتويات الإرشادية	1. Introduction to computer basics (2 hours) ○ Basics and computers (2 hours) ○ Computer basics (4 hours) 2. System unit (2 hours) ○ • Input, output and storage (4 hours) 3. OS 10 Essentials (5 hours) ○ Introduction to Windows 10 ○ Windows10 management and maintenance 4. Understand application software ○ • Microsoft Office 2010 ○ • Word processing using Microsoft Word 2010 ○ • Creating spreadsheets using Microsoft Excel 2010 ○ • Access 2010 database management ○ • Create presentation graphics using PowerPoint 2010 5. Connectivity and communication ○ • Fundamentals of networking and the Internet ○ • Online communication Web Basics ○ Privacy and security in networks and the Internet

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Provide the visuals. Support student understanding with visual examples, instructions, and explanations. 2. Encourage the students. Studies show that encouragement from a teacher or a parent is associated with increased students' interest in learning computer science. 3. .Encourage students to work together and help each other learn. 4. Create a link in the real world. Helping students see how computer science is relevant to their lives and future jobs. 5. Collaborate and share. Encourage students to collaborate on projects and share their work with others. 6. The students learned that intelligence is not fixed and that they can improve their skills with hard work and practice

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5,10	5,6 and 7
	Assignments	2	10% (10)	2,12	8
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	2
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	1-4
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to computer basics
Week 2	The system unit
Week 3	Operating system basics
Week 4	Understanding application software
Week 5	Electronic banking services
Week 6	ATM and Debit Card Services
Week 7	Electronic Alerts
Week 8	Quizzes
Week 9	Privacy and security in networks and the Internet
Week 10	Create presentation graphics using PowerPoint 2010
Week 11	Connectivity and communication
Week 12	Fundamentals of networking and the Internet
Week 13	Online communication
Week 14	Artificial Intelleigence
Week 15	Artificial Intelleigence

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Microsoft Excel 2010
Week 2	Microsoft Excel 2010
Week 3	Microsoft Excel 2010
Week 4	Quizzes
Week 5	Microsoft Excel 2010
Week 6	Microsoft Excel 2010
Week 7	PowerPoint 2010

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Week 8	PowerPoint 2010
Week 9	Quizzes
Week 10	PowerPoint 2010
Week 11	PowerPoint 2010
Week 12	Fundamentals of networking and the Internet
Week 13	Fundamentals of networking and the Internet
Week 14	Quizzes
Week 15	Applications

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Organic chemistry			**Module Delivery**	
Module Type	B			☒**Theory** ☒**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	Envs104				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	one		**Semester of Delivery**	one	
Administering Department	Environmental Science		**College**	**College Of Environmental Science and Technologies**	
Module Leader	Suher Muneer Dawoud&Marwa Nizar Abdulfattah		**e-mail**	Suher.alsaaty@uomosul.edu.iq Marwa.albeeram@uomosul.edu.iq	
Module Leader's Acad. Title	Teacher		**Module Leader's Qualification**	Ph.D in chemistry science	
Module Tutor	Aser Ihsan Abdullah		**e-mail**	aser.abdullah@uomosul.edu.iq	
Peer Reviewer Name	Gazwan Thamir Qasim		**e-mail**	Ghazwan.kasem@uomosul.edu.iq	
Scientific Committee Approval Date	2024-2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	Analytical Chemistry	**Semester**	1st

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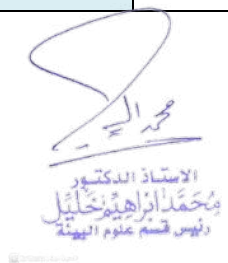
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- Know the classes of organic compounds based on the active and substituted groups in the compound. 2- Knowing how to write the molecular, structural and stereo formulas of organic compounds. 3- The student will master how to distinguish between aliphatic compounds such as alkanes, alkenes, and alkynes. 4- The student will know how to distinguish between cyclic and non-cyclic compounds. 5- Know how to distinguish between aliphatic and aromatic compounds.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- That the student learn how to write organic compounds, since most of the environmental pollutants are organic chemicals. 2- That the student learn to name organic compounds using the common and regular nomenclature. 3- That the student learn to write equations for the reactions of organic compounds. 4- The student learns how to identify these organic compounds. 5- Know how to purify organic compounds
Indicative Contents المحتويات الإرشادية	Aliphatic hydrocarbons. - Alkanes. Naming the alkanes. Alkane reactions. Methods for preparing alkanes. Cycloalkanes, naming cycloalkanes Alkenes, the name of alkenes Physical properties of alkenes Alkene reactions Preparation of alkenes Cycloalkenes, name cycloalkenes Alkynes, naming alkynes Physical properties of alkynes, preparation of alkynes Cycloalkenes and dienes, naming cycloalkenes and dienes Aromatic hydrocarbons, benzene and its derivatives Compensation reactions on the benzene ring



Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1- Giving an overview of organic chemistry and some of the classes of these compounds and their importance in various sciences. 2- Clarifying the relationship of organic chemistry with other chemistry sciences. 3- Adopting group work inside the laboratory by dividing the students into groups, assigning each group to carry out laboratory tasks according to the nature of the lecture given inside the laboratory. 4- The theoretical lectures given correspond to what is given inside the laboratory of scientific material.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	5, 6 and 7
	Assignments	2	10% (10)	2, 10	8
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	2
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	1-5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Aliphatic Hydrocarbons: Alkanes and Active Groups (Substituted)
Week 2	Nomenclature of alkanes, physical properties of alkanes
Week 3	Chemical reactions of alkanes
Week 4	Preparation of alkanes
Week 5	Cycloalkanes, naming cycloalkanes
Week 6	Alkenes, the name of alkenes
Week 7	Physical properties of alkenes
Week 8	Alkene reactions
Week 9	Preparation of alkenes
Week 10	Cycloalkenes, name cycloalkenes
Week 11	Alkynes, naming alkynes
Week 12	Physical properties of alkynes, preparation of alkynes
Week 13	Cycloalkenes and dienes, naming cycloalkenes and dienes
Week 14	Aromatic hydrocarbons, benzene and its derivatives
Week 15	Compensation reactions on the benzene ring
Week 16	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction and precautions in vitro
Week 2	Melting point experiment
Week 3	Boiling point experiment
Week 4	Methods of purifying organic matter: 1- Recrystallization
Week 5	recrystallization
Week 6	2- Nomination
Week 7	3- Extraction

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Week 8	Comprehensive exam
Week 9	4- Distillation: simple distillation
Week 10	simple distillation
Week 11	Fractional distillation
Week 12	steam distillation
Week 13	5- Sublimation
Week 14	Review and discussion of the article
Week 15	Exam

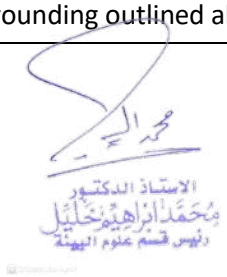
Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of organic chemistry	
Recommended Texts	Textbook of Organic Chemistry, by Morrison and Boyd	
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

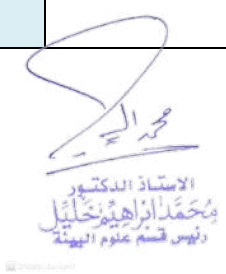


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

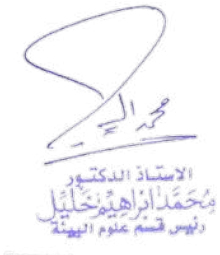
Module Information معلومات المادة الدراسية					
Module Title	English language			**Module Delivery**	
Module Type	Bologna system			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code					
ECTS Credits					
SWL (hr/sem)					
Module Level			**Semester of Delivery**		FIRST
Administering Department	Environmental sciences		**College**	Environmental sciences	
Module Leader	Suzan Ismail Hussain		**e-mail**		
Module Leader's Acad. Title	Assistant lecture		**Module Leader's Qualification**		M.A. in translation
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	2024-2025		**Version Number**		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module		**Semester**	



Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	to develop the standards of students in writing and speaking. to raise the standards of students in writing and speaking. To acquire an efficient ability to communicate with others through the usage of better grammar.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-To acquire more information about the verb forms in English. 2-To provide information about different grammatical uses of tenses which will enable the students to describe and use in everyday communication 3- To improve the grammatical skills of the students. 4- To correctly use these verb forms in writing and in speaking.
Indicative Contents المحتويات الإرشادية	• •

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Lecture 2. class discussion 3. group presentation 4. Reports



Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل		**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل		**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل			

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	1	10	4	
	Assignments	2	5	6	
	Projects / Lab.	1	10	7	
	Report	1	10	12	
Summative assessment	**Midterm Exam**	1	10	11	
	Final Exam				
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Function of English grammar
Week 2	Parts of speech
Week 3	Common and proper nouns
Week 4	Plural and singular nouns
Week 5	English verbs
Week 6	Main/helping /model verbs
Week 7	Regular and irregular verbs
Week 8	English Adverbs
Week 9	English Articles

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Week 10	English Adjective
Week 11	Mid-term exam
Week 12	Present simple tense
Week 13	Past simple tense
Week 14	Present continuous tense
Week 15	Comprehensive review/مراجعة شاملة

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**

Required Texts	Liz and John Soars,2010, Headway, Oxford University Press	
Recommended Texts	1- Murphy, Edmond, (2006) Grammar in Use, Fifth Edition. Longman 2- Quirk, Randolph & Greenbaum, S. (1973) A University Grammar of English, Longman	
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** – Excellent	امتياز	90 - 100	Outstanding Performance
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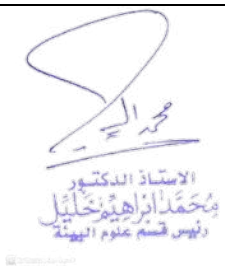
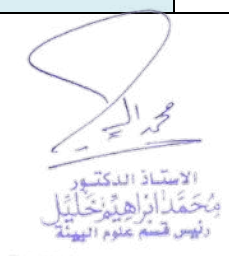


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية			
Module Title	plant taxonomy	**Module Delivery**	
Module Type	B	☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**TE-UOMOS-038941001-38**		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level		**Semester of Delivery**	
Administering Department	Env.Science	**College**	Environmental Sciences University
Module Leader	Mishaal ali mohammed	**e-mail**	mishaalalanziy@uomosul.edu.iq
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	
Module Tutor	Dr. Faten Khalil Ibrahim	**e-mail**	fatinalatrakche@uomosul.edu.iq
Peer Reviewer Name	Lecturer	**e-mail**	
Scientific Committee Approval Date	2024-2025	**Version Number**	1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module	None	**Semester**	



Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. Communicating an idea of plant taxonomy 2. Highlight the importance of plant taxonomy. 3. Highlighting the economic importance of plant taxonomy 4. Give an idea of the geographical distribution of plant
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Communicating an idea of plant taxonomy . 2. Highlight the importance of plant taxonomy. 3. Highlighting the economic importance of algae 4. Give an idea of the geographical distribution of plant
Indicative Contents المحتويات الإرشادية	1. Introduction to plant taxonomy and its relationship with other biological sciences. 2. Evolutionary directions of seed plants 3. Compare developed adjectives with primitive adjectives with examples. 4. Classification systems, artificial system, natural system and evolutionary system. 5. Approved adjectives for the classification of plants. 6. The quarterly exam. 7. The basis of classification. 8. Major taxonomic ranks and minor taxonomic ranks. 9. Local nomenclature is a multi-word nomenclature and scientific nomenclature. 10. Write the scientific name, genus name and species name with examples. 11. The rules of the international naming system with examples, explain the rule of precedence. 12. Seed plants are monoecious and dioecious. 13. Know the different parts of the plant and the types of seeds. 14. Plant families.

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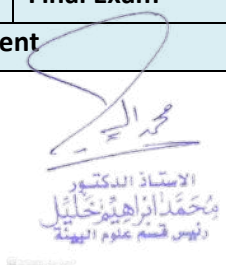
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Clarifying the importance of plants in the environment by withdrawing CO2 and subtracting O2 2. Knowledge of animal behavior and its role in the ecological balance and sustainability of the food chain 3. Linking theoretical ideas with practical experiments to clarify some of the processes in the importance of photosynthesis and plant respiration 4. Illustrate animal behavior with videos in a scientific style

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	95	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	1
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	80	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	14
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10%(10)	4,9	3,7,10
	Assignments	2	10%(10)	2,12	8
	Projects / Lab.	1	10%(10)	Continuous	All
	Report	1	10%(10)	11	2
Summative assessment	**Midterm Exam**	2h	10%(10)	7	1-4
	Final Exam	2h	50%(50)	16	All
Total assessment			100% (100 Marks)	All	



Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to plant taxonomy and its relationship with other biological sciences.
Week 2	Evolutionary directions of seed plants
Week 3	Compare developed adjectives with primitive adjectives with examples.
Week 4	Classification systems, artificial system, natural system and evolutionary system.
Week 5	Approved adjectives for the classification of plants.
Week 6	The quarterly exam.
Week 7	The basis of classification.
Week 8	Major taxonomic ranks and minor taxonomic ranks.
Week 9	Local nomenclature is a multi-word nomenclature and scientific nomenclature.
Week 10	Write the scientific name, genus name and species name with examples.
Week 11	The rules of the international naming system with examples, explain the rule of precedence.
Week 12	Seed plants are monoecious and dioecious.
Week 13	Know the different parts of the plant and the types of seeds.
Week 14	Plant families.
Week 15	Introduction to plant taxonomy and its relationship with other biological sciences.
Week 16	Evolutionary directions of seed plants

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Root/root zones/ division of roots relative to their origin
Week 2	Legs / leg functions/ types of legs according to external appearance
Week 3	Plants are divided according to the nature of their stems / types of stems according to the direction of growth/ mutations of aerial stems
Week 4	Leaves/ parts of the Leaf/ anchor / arrangement of leaves / division of the leaf according to the degree of complexity/blade shapes
Week 5	Tip of the blade
Week 6	Blade base
Week 7	Leaf sweating

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Week 8	Surface cladding
Week 9	Leaf mutations
Week 10	Venus / floral oceans/ symmetry of Venus
Week 11	Cup / welded Cup splints/loose Cup splints
Week 12	Cup mutations
Week 13	Corolla / Corolla forms / Corolla mutations
Week 14	Stamens / number of stamens
Week 15	The dyadic Union

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts		
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** – Excellent	امتياز	90 - 100	Outstanding Performance
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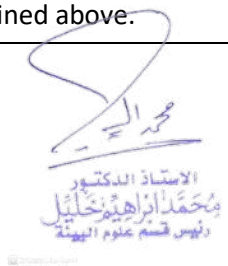
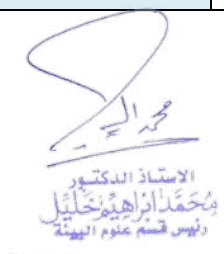


MODULE DESCRIPTION FORM

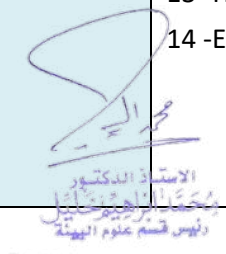
Module Information					
Module Title	**Environmental impact assessment**			**Module Delivery**	
Module Type	Cure			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**ENVS220**				
ECTS Credits	3				
SWL (hr/sem)	75				
Module Level		Second grade	**Semester of Delivery**		Second Semester
Administering Department		Dep. Of Environment Science	**College**	Environmental Sciences	
Module Leader	**Dr. Ahmed Riyadh Al-Iraqi**		**e-mail**	ahmedaliraqi@uomosul.edu.iq	
Module Leader's Acad. Title		Lecturer	**Module Leader's Qualification**		Doctor
Module Tutor	**Dr. Ahmed Riyadh Al-Iraqi**		**e-mail**	ahmedaliraqi@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		2024-2025	**Version Number**	1.0	

Relation with other Modules			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	



Module Aims, Learning Outcomes and Indicative Contents

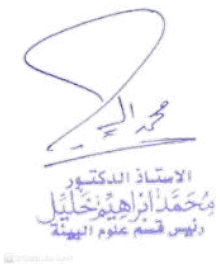
Module Aims	The Environmental Impact Assessment of Projects course aims to 1. Highlight the basic concepts of evaluating the environmental impacts of a project and its importance in ensuring the project's sustainability, as well as acquiring the ability to participate in and review this type of study. 2. Achieve integrated environmental management and optimal utilization of material, human, and intangible resources to ensure continuous economic development and meet present-day needs while protecting the environment for future generations. 3. Highlight environmental problems and the importance of achieving sound environmental management of natural resources through the concept of sustainable development. 4. Incorporate environmental considerations into the decision-making process.
Module Learning Outcomes	1. Enabling the student to understand the concept of environmental impact assessment and how to apply it practically. 2. Enabling the student to understand the impact of various projects on human comfort and public health 3. Developing the student's skills in terms of his ability to assess the harmful effects of projects on environmental components, how to manage them, and developing solutions and alternative methods that can be applied to reduce and eliminate the potential negative effects of the project. 4- The student becomes able to differentiate between types of projects in terms of whether they need to be classified as environmental impact assessments.
Indicative Contents	1 - Stages of development of the environmental impact assessment process 2 - Principles of the environmental impact assessment process for projects 3 - Who needs to evaluate the environmental impacts of projects 4 - General structure of environmental impact assessment processes 5 - Steps of environmental impact assessment 6 - Important impacts that must be taken into consideration and their impact on the environment assessed 7 - Evaluating the types of potential impacts on the environment Steps of impact analysis and calculating the impact analysis 10- Comparison between the methods used in impact analysis 11- Measures needed to reduce potential impacts on the environment 12- Elements of impact mitigation 13- How to write an environmental impact assessment report 14 -Examples of environmental impact assessments for some projects



Learning and Teaching Strategies	
Strategies	1-Give a general description of the prescribed curriculum in line with the student's intellectual abilities. 2-Encourage students' active participation within the lesson to achieve the set objectives . 3-Assign students to solve a specific task assigned to them and discuss its results 4-Ask questions during the lecture to develop student feedback 5- Increase student motivation by allowing them to express their thoughts about the lecture and ask questions and discuss them. 6- Divide students into small groups and ask them questions to develop their thinking process .

Student Workload (SWL)			
Structured SWL (h/sem)	45	**Structured SWL (h/w)**	3
Unstructured SWL (h/sem)	27	**Unstructured SWL (h/w)**	1.8
Total SWL (h/sem)	75		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	10%(10)	3,9	3,5
	Assignments	1	10%(10)	7	8
	Projects / Lab.	-	-	-	-
	Report	10	10%(10)	14	1-14
Summative assessment	**Midterm Exam**	1h	10%(10)	1-7	7
	Final Exam	3h	50%(50)	16	All
Total assessment			100% (100 Marks)	All	



Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	General Introduction to Environmental Impact Assessment
Week 2	Objectives and Structures of the Environmental Impact Assessment Process for Projects
Week 3	Steps of Environmental Impact Assessment
Week 4	Evaluation of the Types of Potential Impacts on the Environment
Week 5	Impact Analysis
Week 6	Calculating the Impact Analysis
Week 7	Midterm Exam
Week 8	Risk Mitigation
Week 9	Actions Necessary to Reduce Potential Impacts on the Environment
Week 10	Preparing and Writing an Environmental Impact Assessment Report
Week 11	Completing the Steps for Writing an Environmental Impact Assessment Report
Week 12	Management functions, management levels, foundations and stages of planning
Week 13	The importance of planning in environmental impact assessment and its justifications
Week 14	General Review
Week 15	End-of-Term Exam

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	

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Week 9	
Week 10	
Week 11	
Week 12	
Week 13	
Week 14	
Week 15	

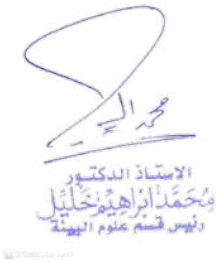
Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	A Handbook of Environmental Impact Assessment, Prepared for SNH by David Tyldesley and Associates Edinburgh2nd Edition. 2005. Methods of environmental Impact Assessment, by Peter Morris, 2010. Environmental Impact Assessment, A Guide to best professional practices, by Charles Eccleston, 201	
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	Marks (%)	Definition
Success Group (50 - 100)	**A –** Excellent	90 - 100	Outstanding Performance
	B - Very Good	80 - 89	Above average with some errors
	C – Good	70 - 79	Sound work with notable errors
	D – Satisfactory	60 - 69	Fair but with major shortcomings
	E – Sufficient	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	(45-49)	More work required but credit awarded
	F – Fail	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

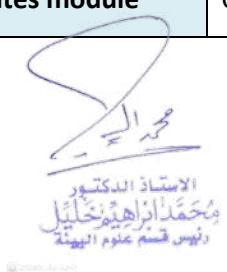


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Analytical chemistry		**Module Delivery**		
Module Type	B		☒**Theory** ☒**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**		
Module Code	Envs104				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	one		**Semester of Delivery**	one	
Administering Department	Environmental Science		**College**	**College Of Environmental Science and Technologies**	
Module Leader	Suher Muneer Dawoud&Marwa Nizar Abdulfattah		**e-mail**	Suher.alsaaty@uomosul.edu.iq Marwa.albeeram@uomosul.edu.iq	
Module Leader's Acad. Title	Teacher		**Module Leader's Qualification**	Ph.D in chemistry science	
Module Tutor	ASER IHSAN ABDULLAH Suha Saad Ali		**e-mail**	aser.abdullah@uomosul.edu.iq suhasaaad@uomosul.edu.iq	
Peer Reviewer Name	Omar Idrees Saleh		**e-mail**	omersaleh@uomosul.edu.iq	
Scientific Committee Approval Date	2024-2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	Organic Chemistry	**Semester**	2nd



Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**1. Identify chemicals and their interactions.** **2. Identify the properties of chemicals and how to distinguish between them.** **3. Preparing research and studies for the purpose of student development.** **4. Preparing students familiar with all calculations related to the preparation of chemical compounds.** **5. Graduating students with the ability to prepare compounds using chemical methods.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**The ability to perform chemical calculations for chemical analyses and knowledge of all chemical analyses**
Indicative Contents المحتويات الإرشادية	**Developing students' ability to share ideas**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Interactive theoretical lectures, electronic lectures, use of data show explanations, practical laboratories, workshops, seminars, YouTube videos, and seminars.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem)	175		

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الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	5, 6 and 7
	Assignments	2	10% (10)	2, 10	8
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	2
Summative assessment	Midterm Exam	2hr	10% (10)	7	1-5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	General introduction about analytical chemistry, types of solutions, classification of solutions, electrolytes)
Week 2	Qualititative &quantitative analysis
Week 3	calculation of density and specific weight, mall and number of moles, molecular weight
Week 4	Classification of solutions.
Week 5	Methods for expressing concentrations: molar, formal, normal or standard, calculating the equival weight
Week 6	molar, molar fraction with arithmetic questions,
Week 7	percentage of percentage
Week 8	molar, molar fraction with arithmetic questions,
Week 9	Calculation of Methods for expressing concentrations
Week 10	Calculation of equivalent weight
Week 11	Relationship between molar, normal &calculation
Week 12	percentage of percentage, part per million, part per billion
Week 13	Semester exam
Week 14	Quantitative and gravimetric analysis steps
Week 15	General review

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Week 16	

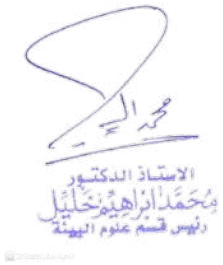
Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	General directions and instructions about the analytical chemistry
Week 2	Glassware, Devices and tools used in the laboratory
Week 3	Introduction to qualitative, quantitative and volumetric analysis
Week 4	Volumetric analysis (titration and calibration, equilibration calibrations)
Week 5	Titration experiment (A, B, C)
Week 6	Precipitation titration Mohr and Volhard experiment
Week 7	Midcourse exam
Week 8	Oxidation and reduction titration and complex formation titration
Week 9	hardness of water.
Week 10	Introduction to the spectrum and detection of phosphate by the spectroscopic method
Week 11	measuring nitrite ions by using Visible molecular spectrum.
Week 12	Flame spectrometry and elemental measurement
Week 13	Nefelometry for sulfate determination
Week 14	Review
Week 15	Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**

Required Texts	Reference text Stoog DA, West DM. Fundamentals of Analytical Chemistry, 9th edition, 2008.	
Recommended Texts		
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

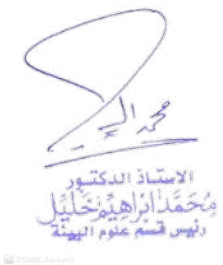


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Pollution Basics			**Module Delivery**	
Module Type				☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code					
ECTS Credits	6				
SWL (hr/sem)	158				
Module Level			**Semester of Delivery**		
Administering Department	Environmental Sciences		**College**	College of Environmental Sciences	
Module Leader	Ansam ahmed saadoon		**e-mail**	ansamahmed@uomosul.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**	PhD	
Module Tutor	Ahmed ismaiel		**e-mail**	Ahmed.ismael@uomosul.edu.iq	
Peer Reviewer Name	Sara basam		**e-mail**	Saraedrees@uomosul.edu.iq	
Scientific Committee Approval Date	2024-2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	ecology	**Semester**	First



Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	Identify pollution in the ecosystem and its types • Identify the causes of each type of pollution • Identify the effects of pollution on living organisms
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	* Know the types of pollution in the ecosystem • Know the sources of pollution • Know the effects of pollution on living organisms * The ability to treat pollutants using scientific methods
Indicative Contents المحتويات الإرشادية	1- The topic of types of pollutants requires more than one lecture. 2- Water pollution is studied in two parts. 3Water pollution treatment requires more than one lecture to cover all methods

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Delivering weekly lectures and reports on the basics of environmental pollution.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10%	5 . 10	5.6&7
	Assignments	2	10%	2. 12	8
	Projects / Lab.	1	10%	Con.	All
	Report	1	10%	13	2
Summative assessment	Midterm Exam	2hr	10%	7	1.5
	Final Exam	2hr	50%	16	
Total assessment			100% (100 Marks)		All

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Pollution Basics
Week 2	Introduction to Water Pollution
Week 3	Sources and Causes of Water Pollution
Week 4	Complete Sources of Water Pollution
Week 5	Water Treatment Methods
Week 6	Stages Additional to Treatment Processes
Week 7	Soil Pollution and Its Sources
Week 8	Primary Pollutants
Week 9	Secondary Pollutants
Week 10	Pesticides and Their Types
Week 11	Air Pollution and Its Sources
Week 12	Causes of Air Pollution
Week 13	Complete Causes of Air Pollution
Week 14	Global Warming
Week 15	Acid Rain, Its Causes, and Effects
Week 16	

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Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Introduction to Environmental Pollution**
Week 2	**How to Collect Polluted Water Samples from Rivers**
Week 3	**Water Pollution and Its Impact on the Environment**
Week 4	**Pollutant Classification Systems**
Week 5	**Air Pollutant Gases and Their Impact on Biodiversity**
Week 6	**Environmental Degradation Resulting from Air Pollution**
Week 7	**Biolgical Air Pollution**
Week 8	**Soil Pollution by Fertilizers and Their Impact on the Environment**
Week 9	**TDS (Tested Dissolved Salts in Water)**
Week 10	**Elctrical Conductivity, Function, and Acidity Measurement in Water**
Week 11	**Nitrate Measurement in Soil Contaminated with Chemical Fertilizers**
Week 12	**The Dangers of Nitrates to Human Health**
Week 13	**How to Collect Soil Samples in Contaminated Areas**
Week 14	**Biological Remediation to Reduce Soil Pollution**
Week 15	**Field Comparison of the Physical and Chemical Properties of Polluted and Unpolluted Water**

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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Environmental Pollution Book	
Recommended Texts		
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
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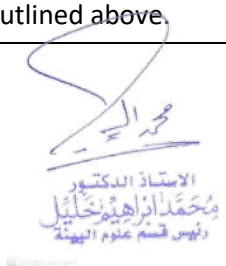
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.



MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	plant ecology			**Module Delivery**	
Module Type				☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code					
ECTS Credits	6				
SWL (hr/sem)	158				
Module Level			**Semester of Delivery**		
Administering Department	Environmental Sciences		**College**	College of Environmental Sciences	
Module Leader	Ansam ahmed saadoon		**e-mail**	ansamahmed@uomosul.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**	PhD	
Module Tutor	Ahmed ismaiel		**e-mail**	Ahmed.ismael@uomosul.edu.iq	
Peer Reviewer Name	Sara basam		**e-mail**	Saraedrees@uomosul.edu.iq	
Scientific Committee Approval Date	2024-2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	ecology	**Semester**	First

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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- Identify plant ecology and how to study plant ecology. 2- Introduce students to the various methods used to analyze vegetation. 3- Identify the characteristics of vegetation. 4- Introduce students to the types of ecological succession. 5- Study the various types of environmental factors and their effects on plants.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Defining plant ecology and how to study plant ecology using the main methods. 2- Studying plant ecology using the quadrat method. 3- Studying plant ecology using the sector method. 4- Understanding how habitat succession occurs on land and in water. 5- Studying the effects of climate, soil, topography, and biological factors on plants.
Indicative Contents المحتويات الإرشادية	1- The topic of vegetation analysis requires more than one lecture. 2- Environmental succession is studied in two parts. 3- Environmental factors require more than one lecture to fully cover all factors.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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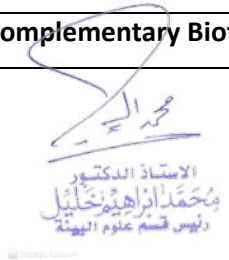
Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10%	5 . 10	5.6&7
	Assignments	2	10%	2. 12	8
	Projects / Lab.	1	10%	Con.	All
	Report	1	10%	13	2
Summative assessment	Midterm Exam	2hr	10%	7	1.5
	Final Exam	2hr	50%	16	
Total assessment			100% (100 Marks)		All

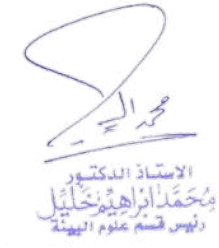
Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	introduction to Plant Ecology
Week 2	Natural and Abnormal Vegetation
Week 3	Methods of Vegetation Analysis
Week 4	Sector Method
Week 5	Tiered Squares Method
Week 6	Analytical and Compositional Characteristics of Vegetation
Week 7	Arid Ecological Succession
Week 8	Aquatic Ecological Succession
Week 9	Environmental Factors Affecting Plants
Week 10	Climatic Factors
Week 11	Complementary Climatic Factors
Week 12	Complementary Climatic Factors
Week 13	Solar Factors
Week 14	**Topographic Factors**
Week 15	**Biological Factors**
Week 16	**Complementary Biotic Factors**



Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to Plant Ecology - What is meant by plant ecology and ecology?
Week 2	Basic understanding of environmental factors
Week 3	Climatic factors (weather factors)
Week 4	A group of climatic (weather) factors - The atmosphere - Light - The effect of light on plants - The effect of vegetation on light - Temperature - Thermal damage - The damage of high temperatures to plants - The damage of low temperatures to plants - Thermal control - Types of thermometers used to measure temperature
Week 5	Water Classification of plants according to the aquatic environment in which they live - Measuring plant water requirements - The effect of water deficiency on plants - The effect of excessive humidity
Week 6	Wind - The physiological effects of wind - Soil erosion by wind
Week 7	Soil formation factors Estimating the pH and organic matter of soils

	Estimating soil texture using a hydrometer (hydrometer method)
Week 8	Plant productivity - Gross productivity - Net productivity - Leaf productivity
Week 9	Measuring Plant Leaf Area Area Meter
Week 10	Transpiration - Estimating Transpiration - Detecting Transpiration Using Cobalt Chloride Paper
Week 11	Explaining how water vapor rises during transpiration
Week 12	How to detect soil horizons and measure soil color in the presence of vegetation
Week 13	Aquatic Plants and Their Classifications
Week 14	Estimating Soil Moisture Using the Gravimetric Method
Week 15	Measuring Biomass

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Plant Ecology and Applied Ecology by Dr. Abdel Fattah Badr Muhammad Badr	
Recommended Texts	External Books and Resources: Plant Ecology by Dr. Ahmed Muhammad Mujahid	
Websites		



Grading Scheme مخطط الدرجات				
Group	**Grade**	Grade	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A –** Excellent	**Excellent**	90 – 100	Outstanding Performance
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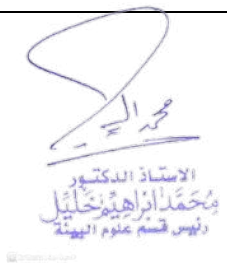
Fail Group (0 – 49)	**FX –** Fail	**Fail (in process)**	(45-49)	More work required but credit awarded
	F – Fail	**Fail**	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

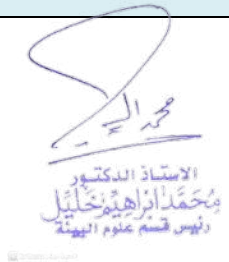


MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Ecology			**Module Delivery**	
Module Type				☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code					
ECTS Credits	6				
SWL (hr/sem)	158				
Module Level			**Semester of Delivery**		
Administering Department	Environmental sciences		**College**	Environmental sciences	
Module Leader	Ansam ahmed saadoon		**e-mail**	ansamahmed@uomosul.edu.iq	
Module Leader's Acad. Title	مدرس		**Module Leader's Qualification**	Phd	
Module Tutor	Noor Abdulghani Al-Hammadi		**e-mail**	noorabdalkany@uomosul.edu.iq	
Peer Reviewer Name	Sara bassam Idrees		**e-mail**	saraedrees@uomosul.edu.iq	
Scientific Committee Approval Date	2024-2025		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	Plant ecology	**Semester**	First



Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1- Understanding the Basics of Ecology: Enable students to understand ecological principles and concepts and their relationship to other sciences. 2-Analyzing Ecological Interactions: Develop students' ability to analyze the interactions between living organisms and their environment and how human activities impact these systems. 3- Practical Skills Development: Teach students how to use environmental tools and techniqu to design experiments and analyze environmental data. 4-Environmental Awareness: Encourage critical thinking on contemporary environmental issues such as pollution, climate change, and sustainability
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1-Explain ecological principles and describe their relationship to other scientific disciplines. 2-Identify and analyze the components of ecosystems and assess environmental changes and their impacts. 2-Apply environmental research methods and experimental design to investigate and analyze pollution. 3-Assess the quality of water, soil, and air using environmental indicators. 4-Evaluate sustainability strategies and propose evidence-based solutions to environmental problems.
Indicative Contents المحتويات الإرشادية	-Introduction to Practical Ecology - Field Activities - Biodiversity Study in Different Environments - Pollution Impact Study - Species-Environment Interactions - Methodology and Field Techniques - Case Studies - Results and Analysis

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1-General Course Overview:** Provide a general description of the course structure that aligns with the students' intellectual abilities. **2-Active Student Participation:** Encourage active student participation during lectures to achieve course objectives. **3-Assigned Tasks:** Assign specific tasks to students, with the expectation that they discuss the results. **4-Questioning During Lectures:** Raise questions during lectures to stimulate feedback and enhance learning. **5-Encourage Student Motivation:** Allow students to express their thoughts on lectures, encouraging them to raise and discuss questions. **6-Group Work:** Divide students into small groups and ask questions to develop their thinking processes.

الاستاذ الدكتور
محمد ابراهيم خليل
رئيس قسم علوم البيئة

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	75	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10%	5 . 10	5.6&7
	Assignments	2	10%	2. 12	8
	Projects / Lab.	1	10%	Con.	All
	Report	1	10%	13	2
Summative assessment	**Midterm Exam**	2hr	10%	7	1.5
	Final Exam	2hr	50%	16	
Total assessment			100% (100 Marks)		All

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Learn about different ecosystems and the characteristics of each system**
Week 2	**Understand the relationship between ecology and other sciences**
Week 3	**Understand the components of ecosystems**
Week 4	**Study the types of food chains**
Week 5	**The relationship between living organisms, both negative and positive**
Week 6	**Ecological pyramids and study their types**

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Week 7	Element cycles and their role in environmental balance
Week 8	Productivity
Week 9	Factors affecting productivity
Week 10	Continuing the topic of factors affecting productivity
Week 11	Environmental pollution and types of pollutants
Week 12	Soil pollution
Week 13	Water pollution
Week 14	Air pollution

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to Environmental Research Methods
Week 2	Environmental Experiment Design
Week 3	Water Quality and Pollution Assessment
Week 4	Soil Analysis and Human Activity Impacts
Week 5	Human Impacts on the Environment (Pollution and Climate Change)
Week 6	Light and Its Effects on Living Organisms
Week 7	Sustainability and Environmental Solutions
Week 8	Environmental Indicators
Week 9	Environmental Threats
Week 10	Microenvironment
Week 11	Environmental Monitoring
Week 12	Midterm Exam
Week 13	Identifying the types and sources of pollution: The student visits the polluted area and identifies the type and source of pollution
Week 14	Identifying the types and sources of pollution: The student visits the polluted area and identifies the type and source of pollution (the second visit is to identify water pollutants, water pollution by sewage waste)

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Week 15	**Identifying the types and sources of pollution: The student visits the polluted area and identifies the type and source of pollution (the third visit is to identify soil pollutants, soil pollution by solid waste)**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Ecology	
Recommended Texts	-Principles of Environmental Science by William P. Cunningham & Mary Ann Cunningham - Introduction to Environmental Studies by Andrew Friedland & Rick Relyea -National Geographic - Environmental Science	
Websites	●UN Environment Programme (UNEP) • World Wildlife Fund (WWF) Reports	

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	**A** – Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C – Good	جيد	70 - 79	Sound work with notable errors
	D – Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E – Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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