MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Computer		**Module Delivery**		
Module Type	Core		☒**Theory** ☒**Lecture** ☒**Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**		
Module Code					
ECTS Credits	3				
SWL (hr/sem)	150				
Module Level	2		**Semester of Delivery**	1	
Administering Department	قسم التلوث البيئي		**College**	كلية علوم البيئة	
Module Leader	Inas kadhim jebur		**e-mail**	Inaskadhim87@uoqasim.edu.iq	
Module Leader's Acad. Title	Lecture		**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Students successfully completing this course will be able to: 1- Utilize the computer for fundamental tasks. 2- Identify and discuss the hardware components of the computer system. 3- E-Commerce: Concepts of Electronic banking Services. 4- Conducting research on the Internet. 5- An introduction to Artificial Intelligence.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Providing the student with Security and Networking. 2- Training the student in E-Commerce: Concepts of Electronic banking Services 3- Teaching the student to use of the computer and its various systems and identifying its parts and the development that has occurred in it from the beginning of the computer to the present time. 4- Definition of Al, History of AI, AI Techniques and Approaches, Challenges and Ethical Considerations. 5- Training the student in Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Expanding their critical thinking skills through classes, interactive tutorials and by considering types of simple experiments involving some slide showing that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3

Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	10	4, 6, 10	#1 and#2, #3-#5, #9
	Assignments	2	10	13 and 14	#1 and #12
	Projects / Lab.	1	10	continuous	all
	Report	1	10	15	#14
Summative assessment	**Midterm Exam**	2h	10	7	#1-#6, #8-#14
	Final Exam	3h	50	16	all
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري والعملي

	Material Covered	No. of Hours Theoretical	No. of Hours Practical
Week 1	Security and Networking: What is a network? Types of networks. Basic network components Network Security Basics. Understanding network Threats. Network Troubleshooting	2	2
Week 2	E-Commerce: Concepts of Electronic banking Services this include online banking: ATM and debit Card services, Phone banking, SMS banking. Electronic alert, Mobile banking	2	2

Week 3	Computer Troubleshooting: Identifying and solving Common hardware and software problems that Computer users encounter. Basic troubleshooting techniques and tools for diagnosing and resolving Issues.	2	2
Week 4	Computer Troubleshooting: Identifying and solving Common hardware and software problems that Computer users encounter. Basic troubleshooting |techniques and tools for diagnosing and resolving Issues.	2	2
Week 5	Introduction to AI: Definition of Al, History of AI, AI Techniques and Approaches, Challenges and Ethical Considerations.	2	2
Week 6	Introduction to AI: Definition of Al, History of AI, AI Techniques and Approaches, Challenges and Ethical Considerations.	2	2
Week 7	AI in Our Daily Lives: AI in smartphones and Virtual assistants like Siri or Google assistant.	2	2
Week 8	Al in Our Daily Lives: AI in smartphones and Virtual assistants like Siri or Google sistant.)	2	2
Week 9	Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising	2	2
Week 10	Mid Exam		
Week 11	Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising	2	2
Week 12	Applications of AI: Education, Healthcare, Finance, Transportation, Marketing and Advertising	2	2
Week 13	AI and Society: (How AI affects social, AI and International relations, Al and the future of humanity.)	2	2
Week 14	Ethical Challenges in AI, AI ethics, privacy and Surveillance, the impact of AI on the job market.)	2	2
Week 15	The Future of AI (Future trends in AI, recent Research and emerging technologies.)	2	2
Week	Final Exam	2	2

16			

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1- Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology" 3rd Edition (2020) 2- Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology In Action Complete", 16th Edition (2020). 3- Ahmed Banafa, "Introduction to Artificial Intelligence (AI)", 1st Edition (2024). 4- الخضر علي الخضر بحاث "اساسيات الحاسوب" 2016 5- الدكتور عادل عبد النور "مدخل الى عالم الذكاء الاصطناعي" 2005	
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.

Ministry of Higher Education and Scientific Research

Al-Qasim Green University/ College of Environmental Sciences

Environmental pollution Department

"COURSE PORTFOLIO"

Module Information **معلومات المادة الدراسية**					
Module Title	**Atmospheric Chemistry**			**Module Delivery**	
Module Type	**Basic (B)**			☐ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**QEPE3616**				
ECTS Credits	**6.0**				
SWL (hr/sem)	**150**				
Module Level	**2**		**Semester**	**3**	
Department	**Environmental pollution**		**College**	**Environmental Sciences**	
Module Leader	Alaa Khudhair Hashim Al-Khalaf		**E-mail**	Dralaa_al-khalaf@environ.uoqasim.edu.iq	
Module Leader's Acad. Title	**Professor**		**Module Leader's Qualification**	**PhD**	
Module Tutor	**Name (if available)**		**e-mail**		
Peer Reviewer Name	**Name**		**e-mail**	**E-mail**	
Scientific Committee Approval Date	**21/09/2025**		**Version Number**	**1.0**	

Student Workload (SWL): Structured SWL (h/w) (Two contact hours of lectures + Two hours of seminars) + Unstructured SWL (h/w) .

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.7
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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Relation with other Modules:-

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
COURSE DESCRIPTION:	This course focuses on the Concepts and definitions:- Atmospheric Chemistry
Module Aims أهداف المادة الدراسية	The goal of this course is to develop basic skills and knowledge to raise issues associated with the Atmospheric Chemistry
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**At the completion of the course, students are expected to be able to:** 1- Define the principles of atmospheric chemistry. 2- The student will be able to know the mechanisms of interaction in the atmosphere. 3- Describe the foundations of all gases and their incubators present and their cycle. 4- Applying and interpreting the rules related to the course of gaseous reactions. 5- The student should be able to describe the gaseous problems associated with this and their impact on the ozone hole and the phenomenon of global warming.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Atmospheric Chemistry by István Lagzi, Róbert Mészáros, Györgyi Gelybó, and Ádám Leelőssy, 2013 Eötvös Loránd University. Made in the project entitled "E-learning scientific content development in ELTE TTK" with number TÁMOP-4.1.2.A/1-11/1-2011-0073. Consortium leader: Eötvös Loránd University, Consortium Members: ELTE Faculties of Science Student Foundation, IT Study Hungary Ltd.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Introduction to Atmospheric Chemistry: Supplemental Questions and Problems, 11th Edition by Daniel J. Jacob, Harvard University, 2021.	No
Recommended Texts	الكيمياء البيئية، تاليف وضحة وصفي ابو اذهيبة، مكتبة المجتمع العربي للنشر والتوزيع، 2012.	Yes
Websites		

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Grading Scheme مخطط الدرجات				
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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.

COURSE SCHEDULE:-

Week	hours	Topics Covered	Learning Outcomes
1-2	4	Four layers of atmosphere	To introduce the concept of atmospheric chemistry
3-4	4	Gaseous reactions	Learn contributions of components' proportions
5-6	4	Mechanism of reactions	The student learns about main gases types mechanism
7-8	4	Ozone layer	The student learns the effect of gaseous on the ozone layer
9-10	4	Chapman's method	The student learns most gases types and their reactions
11-12	4	Gaseous pollutants	The student learns the concept gases pollutants.
13-14	4	Problems and exercises	Explain everything that related with acidic rain that produced from atmospheric pollution.
14-15	4	General Reviewing	Review the important highlight points of this course and the phenomenon of gaseous pollution such as global warming.
Final Exam			

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Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Preparation gases mixture (CO_2 and NH_3) from urea over different temperatures.
Week 2	Lab 2: Estimation of dissolved carbon dioxide gas by Acid-Base titration methods.
Week 3	Lab 3: Estimation of dissolved ammonia gas by Acid-Base titration method.
Week 4	Lab 4: Detection of dissolved urea components by pH meter and E-conductivity over temperatures.
Week 5	Lab 5: Detection of carbon dioxide gas using clear lime water.
Week 6	Lab 6: Release of oxygen from the decomposition of hydrogen peroxide.
Week 7	Lab 7: Release of sulfur dioxide gas as a result of the oxidation of sugar.

Module Evaluation:-

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment (40%)	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments & H.W.	2	10% (10)	2, 12	LO # 3, 4, 6, and 8
	Projects / Lab.	1	10% (10)	Continuous	
	Seminar	1	10% (10)	14	
	Field Visits Report				
	Discussions During Lectures	10		Continuous	ALL
Summative assessment	**Midterm Exam (10%)**	1hr	10% (10)	8	LO # 1-15
	Final Exam (50%)	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

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توزيع الساعات المجدولة و الغير مجدولة (SWL= SSWL +USWL)

Activity types	Structured SWL	Un structured SWL	No. of weeks	Time Factor	SWL (hr)
Class	Class Lecturers		15	2	30
Lab.			15	2	30
Tutorial					
Self Study		Self Study	10	1	10
Quizzes		Preparation for the Quizzes	2	3	6
discussions during lectures					
Projects / Lab.	Project Work				
		Preparation for the Project	3	2	6
Seminar	Presenting a Seminar		15	2	30
		Preparation for the Project	1	5	5
Assignments, Home Work		Preparation for the H.W.	2	5	10
Report		Preparation for the Report	2	5	10
Midterm Exam (10%)		Preparation for the Exam.	1	5	5
	Evaluation				
Final Exam (50%)		Preparation for the Exam.	1	5	5
	Evaluation		1	3	3
		Total SWL (hr/ Semester)			150
		ECTS			6

Ministry of Higher Education and Scientific Research
Al-Qasim Green University/ College of Environmental Sciences
Environmental pollution Department

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**phytoplankton**			**Module Delivery**	
Module Type	**basic**			☐ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	QEPE2613				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	May Hameed Mohammad		**e-mail**	Mayhameed85@enviro.uoqasim.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	master	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	1/9/2025		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- Defining the term of phytoplankton and distinguishing it from others terms 2- Identifying the types of phytoplankton, sizes, classify, introducing and studying their most important phyla 3- Defining the general form or features of phytoplankton and their most important types 4- Defining its importance in the aquatic environment 5- Explain how it is distributed in the aquatic environment 6- Introducing its environment and how the characteristics of the aquatic environment affect it 7- Defining its productivity and the most important elements it requires 8- Explaining the concept of blooming 9- Introduction to the phylum of blue-green algae, its types and shapes 10- Introduction to the green algae phylum, its features and importance 11- Introduction to the phylum of diatoms, their types, shapes, and presence 12- Introducing the phylum of rotiferous algae, its characteristics and importance 13- Introduction to the phylum Euglena, its characteristics, classification, and environment 14- Introducing the phylum of Cretaceous algae, its importance, environment and classification 15- Identify the most important factors affecting the presence and growth of phytoplankton
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The student must know how to use the term phytoplankton 2. The student gets to know the types of phytoplankton and distinguish their most important phyla 3. The student gets to know the general features of phytoplankton and their most important types 4. the student recognize the importance of phytoplankton in the aquatic environment 5. The student explains how phytoplankton is distributed in the aquatic environment 6. The student should describe the environment of phytoplankton and identify the most important characteristics of the aquatic environment affecting it 7. The student explains the importance of phytoplankton productivity in the aquatic environment and the most important elements it requires 8. The student explains the concept of blooming 9. The student should distinguish the blue-green algae phylum from the rest of the phylum 10. The student identifies the green algae division 11. The student should identify the phylum Diatomaceae and distinguish it from other phyla 12. The student explains the importance of the rotating algae phylum in the aquatic environment 13. The student should distinguish the phylum Euglena 14. The student should differentiate between the Cretaceous algae phylum and the rest of the phyla

	15. The student identifies the most important factors affecting the presence and growth of phytoplankton
Indicative Contents المحتويات الإرشادية	**The Core Curriculum topics may be covered by asynchronous self-directed learning, synchronous virtual learning, face to face tuition, or a blend of these three learning modalities.** The Core Curriculum for Module 1: 1. Definitions and terminology of phytoplankton 2. Types and size of phytoplankton 3. Features of phytoplankton 4. phytoplankton ecology and aquatic ecosystems 5. the important of phytoplankton 6. Phytoplankton taxonomy 7. Distribution of phytoplankton 8. Blooming and productivity of phytoplankton 9. Division; Green blue algae (cyanophyta) 10. Division; Green algae (chlorophyta) 11. Division; diatoms (bacillariophyta) 12. Division; dinoflagellata (pyrophyta) 13. Division; Euglenophyta 14. Division; cocolithophories (chalk-coated) 15. Environmental factors that affected on phytoplankton The Core Curriculum for Module 2: 1- The student writes an essay about what the term phytoplankton includes 2. The student creates a poster about the types of phytoplankton, their sizes, and how to classify them 3. The student draws the general shape or features of the most important phyla of phytoplankton 4. The student writes a report on the importance of phytoplankton in the aquatic environment 5. The student discusses how phytoplankton are distributed in the aquatic environment 6. The student writes a report on its environment and how the characteristics of the aquatic environment affect it 7. The student gives a presentation about its productivity and the most important elements it requires 8. The student discusses the concept of blooming 9. The student explains with a poster the division of blue-green algae, its types and shapes 10. The student submits an article about the green algae phylum 11. The student explains the phylum diagram of diatoms and their types 12. The student discusses the importance of the rotating algae phylum 13. The student draws the most important members of the phylum Euglena 14. The student writes an essay about the phylum Cretaceous algae 15. The student writes a report on the most important factors affecting the presence and growth of phytoplankton The Core Curriculum for Module 3: 1- Reminder of the importance of phytoplankton 2. Preserving phytoplankton species 3. Biological monitoring of the presence of phytoplankton through the general appearance of its most important phyla 4. Reminder of the importance of phytoplankton in the aquatic environment 5. Find ways to determine the distribution of phytoplankton in the aquatic environment

	6. Exploration of its environment and how the characteristics of the aquatic environment affect it 7. Monitoring its productivity 8. Addressing the repercussions of the phenomenon of blooming 9. Finding ways to control the growth of members of the blue-green algae phylum 10. Find ways to benefit from the green algae phylum 11. Addressing the cause of excessive flowering of some members of the phylum Diatomaceae 12. Warning against excessive flowering of some members of the rotiferous algae phylum 13. Find ways to use the phylum Euglena for economic purposes 14. Finding ways to benefit from calcifications of the structures of the Cretaceous algae phylum 15. Reminder of the most important factors affecting the presence and growth of phytoplankton

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Enabling students to research and investigate the types of phytoplankton in different aquatic environments and verifying their presence in some types of water and thus the possibility of inferring some of the characteristics of that water through them. Then enabling students to search for dangerous species and how to reduce that risk as much as possible, in addition to encouraging The desire to preserve the natural food chain in various aquatic environments and to think seriously about how to protect it and limit the flourishing of some species at the expense of others, which may cause the loss of biodiversity in the aquatic environment and to think about sound environmental planning before embarking on the establishment of any institutions or economic or financial projects. Development or energy industry projects and others that could cause the death of important species and the dominance of toxic or dangerous species or whose flourishing causes the deterioration of water bodies.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.7
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**	2/12	10% (10)	2,3,4,5,6,7, 8,9,10,11,1 2,13	LO #1- #14
	Assignments	2/12	10% (10)	2,3,4,5,6,7, 8,9,10,11,1 2,13	LO #1 - #14
	Projects / Lab.	5/2	10% (10)	7, 13	LO #1 - #14
	Report	5/2	10% (10)	7, 13	LO #1- #11
Summative assessment	**Midterm Exam**	4hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

COURSE SCHEDULE:-

Week	hours	Topics Covered	Learning Outcomes
1-2	6	Definitions and terminology of phytoplankton, Types and size of phytoplankton	Defining the term of phytoplankton and distinguishing it from others terms, Identifying the types of phytoplankton, sizes, classify, introducing and studying their most important phyla
3-4	6	Features of phytoplankton, phytoplankton ecology and aquatic ecosystems	Defining the general form or features of phytoplankton and their most important types, Defining its importance in the aquatic environment
5-6	6	the important of phytoplankton, Phytoplankton taxonomy	Explain how it is distributed in the aquatic environment, Introducing its environment and how the characteristics of the aquatic environment affect it
7-8	6	Distribution of phytoplankton, Blooming and productivity of phytoplankton	Defining its productivity and the most important elements it requires, Explaining the concept of blooming

9-10	6	Division; Green blue algae (cyanophyta), Division; Green algae (chlorophyta)	Introduction to the phylum of blue-green algae, its types and shapes, Introduction to the green algae phylum, its features and importance
11-12	6	Division; diatoms (bacillariophyta), Division; dinoflagellata (pyrophyta)	Introduction to the phylum of diatoms, their types, shapes, and presence, Introducing the phylum of rotiferous algae, its characteristics and importance
13-14	6	Division; Euglenophyta, Division; cocolithophories (chalk-coated)	Introduction to the phylum Euglena, its characteristics, classification, and environment, Introducing the phylum of Cretaceous algae, its importance, environment and classification
15	6	Environmental factors that affected on phytoplankton	Identify the most important factors affecting the presence and growth of phytoplankton
Final Exam			

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Definitions and terminology of phytoplankton
Week 2	Types and size of phytoplankton
Week 3	Features of phytoplankton
Week 4	phytoplankton ecology and aquatic ecosystems
Week 5	the important of phytoplankton
Week 6	Phytoplankton taxonomy
Week 7	Distribution of phytoplankton
Week 8	Blooming and productivity of phytoplankton
Week 9	Division; Green blue algae (cyanophyta)
Week 10	Division; Green algae (chlorophyta)
Week 11	Division; diatoms (bacillariophyta)
Week 12	Division; dinoflagellata (pyrophyta)
Week 13	Division; Euglenophyta

Week 14	Division; cocolithophories (chalk-coated)
Week 15	Environmental factors that affected on phytoplankton
Week 16	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Collection of samples: Methods of samplings
Week 2	Fixation and Preservation of phytoplankton samples
Week 3	Culturing and Diagnosis of phytoplankton
Week 4	Division; Green blue algae (cyanophyta)
Week 5	Division; Green algae (chlorophyta)
Week 6	Division; diatoms (bacillariophyta); order: Centrales+ Pennales
Week 7	Division; dinoflagellata (pyrophyta)
Week 8	Division; Euglenophyta
Week 9	Division; golden brown algae (crysophyta)
Week 10	Division; yellow green algae (xanthophyte)
Week 11	Division; cryptophyta
Week 12	Division; silicoflagellates
Week 13	Division; cocolithophories (chalk-coated)
Week 14	Division; rhodophyta (red algae)
Week 15	Division: phaeophyta (brown algae)

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1. Agriculture and Agri-Food Canada. 2011. Algae Identification. Ottawa (Ontario) K1A 0C5 Canada, ISBN 978-1-100-18307-7. 2. Baliarsingh, S. K. 2019. Marine Phytoplankton Photosynthetic Systems - Size classification – Taxonomy. International Training Centre on Operational Oceanography (ITCOocean), Practical course on "Marine Phytoplankton - optics, pigment and taxonomy. Pp: 70. 3. Reynolds, C. S. 2006. The ecology of phytoplankton. Published in the United States of America by Cambridge University Press, New York. Pp: 551.	No

	4. Verlencar, X.N. Desai, S. 2004. Phytoplankton Identification Manual. National Institute of Oceanography, National Institute of Oceanography Dona Paula, Goa - 403 004. Pp: 40. 5. Young, J.; Geisen, M.; Cros, L.; Kleijne, A.; Sprengel, C.; Probert, I. and Østergaard, J. 2003. A guide to extant coccolithophore taxonomy, Journal of Nannoplankton Research Special Issue 1. ISSN 1210-8049. Pp:132.	
Recommended Texts	1-Kudela lab biological oceanography. 2024. Phytoplankton Identification (a look at the tiny drifters along the California coast), university of california santa cruz. Ppt: 91.	No
Websites	https://earthobservatory.nasa.gov/features/Phytoplankton#:~:	

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.

توزيع الساعات المجدولة و الغير مجدولة (SWL= SSWL +USWL)

Activity types	Structured SWL	Un structured SWL	No. of weeks	Time Factor	SWL (hr)
Class	Class Lecturers		15	2	30
Lab.			15	2	30
Tutorial					
Self Study		Self Study	10	1	10
Quizzes		Preparation for the Quizzes	12	2	24
discussions during lectures					
Projects / Lab.	Project Work				
		Preparation for the Project			
Seminar	Presenting a Seminar		15	1	15
		Preparation for the Project			
Assignments, Home Work		Preparation for the H.W.	12	2	24
Report		Preparation for the Report	5	2	10
Midterm Exam (10%)		Preparation for the Exam.	1	4	4
	Evaluation				
Final Exam (50%)		Preparation for the Exam.	1	3	3
	Evaluation				
		Total SWL (hr/ Semester)			150
		ECTS			6

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Remote Sensing**			**Module Delivery**	
Module Type				☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☒Seminar	
Module Code					
ECTS Credits					
SWL (hr/sem)					
Module Level		1	**Semester of Delivery**		1
Administering Department		**Type Dept. Code**	**College**	**College of Environmental Sciences**	
Module Leader	**Name (Qassim a. Talib Al-Shujairy)**		**e-mail**	**Qassim.talib@environ.uoqasim.edu.eq**	
Module Leader's Acad. Title		**Professor**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor			**e-mail**		
Peer Reviewer Name		**Name**	**e-mail**	E-mail	
Scientific Committee Approval Date			**Version Number**		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	- Provide students with a solid understanding of the principles and fundamentals of remote sensing. - Strengthen critical thinking, problem-solving, and decision-making skills through practical applications and case studies. - Foster awareness of ethical and professional responsibilities in handling geospatial and environmental data.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define fundamental concepts and principles of remote sensing (electromagnetic spectrum, sensors, platforms). 2. Operate specialized software (ENVI, ERDAS, SNAP, QGIS, Google Earth Engine) for image processing. 3. Integrate remote sensing data with GIS for advanced spatial analysis. 4. Demonstrate integrity in the use of data, software, and analytical methods. 5. Recognize the role of remote sensing in environmental monitoring, resource management, and disaster assessment.
Indicative Contents المحتويات الإرشادية	**Skills**
	Operate specialized software (ENVI, ERDAS, SNAP, QGIS, Google Earth Engine) for image processing.
	Integrate remote sensing data with GIS for advanced spatial analysis.
	Ethics
	Demonstrate integrity in the use of data, software, and analytical methods.
	Recognize the role of remote sensing in environmental monitoring, resource management, and disaster assessment.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**Learning & Teaching Strategies:** Delivered through lectures, tutorials, lab work, field visits, group discussions, ICT/GIS tools, case studies, and student presentations, supported by independent study and directed reading. **Assessment Strategies:** Combination of written exams (40–50%), lab reports (15–20%), fieldwork reports (10–15%), assignments/case studies (10–15%), and group projects/presentations (10–15%), with ongoing formative assessment (quizzes, discussions, feedback) to monitor progress.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Principles of Remote Sensing
Week 2	Interactions with the Atmosphere
Week 3	Sensor/Platform Systems
Week 4	Satellite-Based Scanning Systems
Week 5	First Exam
Week 6	Satellite-Based Scanning Systems
Week 7	Colour Image Processing
Week 8	Spatial Resolution, Pixel Size, and Scale
Week 9	Radar Basics

Week 10	Second Exam
Week 11	Aerial Photography
Week 12	Image Processing
Week 13	Image Classification
Week 14	Satellite-Based Scanning Systems
Week 15	Applications of Remote Sensing
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Geographic Information System
Week 2	Lab 2: ArcGIS Desktop
Week 3	Lab 3: Geographic Coordinate System
Week 4	Lab 4: Arcmap
Week 5	Lab 5: Using Arcmap
Week 6	Lab 6: Layout tools
Week 7	Lab 7: Database needing

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	- Campbell, J. B., & Wynne, R. H. (2011). *Introduction to Remote Sensing* (5th ed.). Guilford Press. - Sabins, F. F., & Ellis, J. M. (2020). *Remote Sensing: Principles, Interpretation, and Applications* (5th ed.). Waveland Press.	No
Recommended Texts	NASA Earthdata https://earthdata.nasa.gov	
Websites	https://www.usgs.gov/ https://earthengine.google.com/	

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