

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Zoology		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Zoo 101		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr. Ali Bustan Mohsein	e-mail	Ali.alwaaly@qu.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	07/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<p>By the end of this lecture unit, students should:</p> <ol style="list-style-type: none"> 1. Anatomy : The study of the internal structure of animals 2. Cytology : The study of cell structure, its organelles, and their functions 3. Morphology : The study of the form and structure of animals 4. Physiology : The study of the functions and various organs in animals 5. Taxonomy : The study of the classification and the naming of organisms. 6. Histology : The study of the structure and functions of tissues 7. Genetics : The study of heredity and its variations
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. This course will provide students with an opportunity to gain information regarding animal classification and 2. systematic, animal structure and function relationships, evolution between and 3. within major animal groups, human evolution 4. and animal reproduction 5. and development.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Each module is assessed by written examinations and coursework (practical reports, field course reports, essays, problem sheets, exercises and tests).</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<p>We use a mixture of teaching styles - lectures, tutorials, classroom activities and laboratory work.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<p>Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل</p>	<p>94</p>	<p>Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا</p>	<p>6</p>
<p>Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	<p>56</p>	<p>Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	<p>4</p>
<p>Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل</p>	<p>150</p>		

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	Introduction; Biology
Week 2	Characters of living organism ,elements of life
Week 3 Week 4	Structure and function of cells
Week 5	Cell membrane and exchange throw the cell membrane
Week 6	Cell energy
Week 7 Week 8	Respiration and glycolysis
Week 9	TCA cycle oxidative phosphorylation
Week 10	Animal nutrition
Week 11	Animal circulation
Week 12	Animal excretion
Week 13	neurons
Week 14 Week 15	Animal hormones

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: microscopic
Week 2	Lab 2: animal cells
Week 3	Lab 3: animal tissue
Week 4	Lab 4: connective tissue
Week 5	Lab 5: proper connective tissue
Week 6	Lab 6: muscular tissue
Week 7	Lab 7: exame
Week 8	Lab 8: phylum animalia
Week 9	Lab 9: platyhelminthes
Week 10	Lab 10: nematodes
Week 11 Week 12	Lab 11: Lab 12 : arthropoda
Week 13	Lab 13 : mullusca
Week 14	Lab 14 : actinodermata
Week 15	Lab 15 : chordata

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Text-book of zoology by Schmeil, O. (Otto), 1860-1943	No
Recommended Texts	Textbook of General Zoology (Classic Reprint) Hardcover – August 24, 2018 by Winterton Conway Curtis (Author)	No
Websites	https://www.biodiversitylibrary.org/page/18953385	

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

علم النبات – مرحلة اولى علوم حياة

Module Information			
معلومات المادة الدراسية			
Module Title	Botany		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Bot 107		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Layth Sareea Mutar	e-mail	Layth,sareea@qu.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	<ol style="list-style-type: none"> 1. To develop skills and understanding of Microscopes and work on them. 2. To understand Methods of prepare slides for plant parts. 3. This is the basic subject for Methods of Plant physiology experiments. 4. To understand Methods and dates for collecting plants parts. 5. To perform Storage of plants.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Skills of preparing plant slides 2. Identify plants parts. 3. Classification of plants 4. Storage plants parts
Indicative Contents المحتويات الإرشادية	<ol style="list-style-type: none"> 1- Correct handling of Microscopes and work on them 2- Correct handling of Field and laboratory experiments for plant cultivation

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Encourage students' participation in different experiments and Prepare reports
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	56	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
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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	1-Introduction to Botany : Basic Concepts and Definitions
Week 2	2- Cell biology and Genetics
Week 3	3- Plant Cells structure
Week 4	4- Chemical Components of Cells and Cell Metabolism
Week 5	5- Chromosome Organization
Week 6	6- Cell Division and Cell cycle
Week 7	7- Biological Classification
Week 8	8- Plant diversity
Week 9	9- The plant body
Week 10	10- Plants, water and mineral nutrition
Week 11	11- Photosynthesis
Week 12	12- Respiration
Week 13	13- Plant hormones
Week 14	14- Plant growth and development
Week 15	15- Plant stress avoidance and adaptation
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Safety during work in the laboratory
Week 2	Lab 2: Microscopes and work on them

Week 3	Lab 3: Prepare slides for plant parts
Week 4	Lab 4: Plant physiology experiments
Week 5	Lab 5: Field and laboratory experiments for plant cultivation
Week 6	Lab 6: Read the results of previous experiments
Week 7	Lab 7: Prepare reports

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Plant Physiology, 3rd ed by Lincoln Taiz and Eduardo Zeiger-2005	Yes
Recommended Texts	Plant Biology A.J. Lack & D.E. Evans - This edition published in the Taylor & Francis e-Library, 2005.	No
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	Medical Mycology		Module Delivery
Module Type	selective		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Mem 403		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	4	Semester of Delivery	
Administering Department	biology	College	College of science
Module Leader	Neeran Obied Jasim	e-mail	Neran.jasim@qu.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	non	e-mail	E-mail
Peer Reviewer Name	non	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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 ونواتج التعلم والمحاور الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. To understanding the natural of pathogenic fungi 2. To develop skills of laboratory diagnosis of fungal disease 3. To understand the risk factors that causes to infection with fungi 4. This course deals with the basic concept of mycosis (fungal infection) 5. This is the basic subject for health patients especially those with chronic diseases. 6. This course essential for laboratory work
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. definition of medical mycology and the great development in this field that fungi role as new pathogenic agents 2. List the various terms associated with mycosis 3. Summarize what is the methods of classification of mycosis 4. illustration what is superficial mycosis and their effects 5. Describe the cutaneous mycosis and the etiological agents of it. 6- Describe types of tinea that causes by dermatophytes 7. Describe the sub cutaneous mycosis and types of it 7. Describe the systemic mycosis and methods of diagnosis 8. Summarize the types of systemic mycosis 9. Explain what is the term opportunistic mycosis 10. Explain the types of opportunistic mycosis 11. Identify the antifungal and types of it
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>definition of medical mycology and the great development in this field that fungi role as new pathogenic agents, List the various terms associated with mycosis, summarize what is the methods of classification of mycosis, superficial mycosis and their effects (otomycosis, Tinea nigra, Tinea versicolor. [15 hrs.]</p> <p>cutaneous mycosis and the etiological agents of it., types of tinea that causes by dermatophytes, pathogenicity of dermatophytes, requirements of dermatophytes growth, diagnosis of dermatophytes, treatment of dermatophytes [15 hrs.]</p> <p>sub cutaneous mycosis and types of it., Sporotrichosis, Mycetoma, Chromomycosis [10 hrs.]</p> <p>systemic mycosis and methods of diagnosis , types of systemic mycosis ,Histoplasmosis,coccidioidomycosis,paracoccidioidomycosis,Blastomycosis [15 hrs.]</p> <p>opportunistic mycosis, risk factors [6 hrs.]</p> <p>Aspergillosis, candidiasis, cryptocomycosis, mucormycosis, pencillosis, giotrichomycosis, other types of opportunistic mycosis [15 hrs.]</p> <p>Different cases of mycosis. [7 hrs.]</p> <p>Antifungal agents, definition, groups of antifungal, Polyene group, Azole group, Allylamines, Echinocandin, Miscellaneous group. [15 hrs.]</p>

Learning and Teaching Strategies

استراتيجيات التدريس والتعلم

Strategies	The main strategy that will be adopted in delivering this module is refining of students' skills in laboratory work and diagnosis of fungal agents that causes many of mortality diseases especially in This time .This will be achieved through classes, interactive tutorials and experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل التدريسي للطالب محسوب له ٥١ اسبوعا

Structured SWL (h/sem) الحمل التدريسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل التدريسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل التدريسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل التدريسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل التدريسي الكلي للطالب خلال الفصل	125		

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	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المناهج الاسبوي يچ النظري

	Material Covered
Week 1	Introduction
Week 2	definition of medical mycology and some important terms in medical mycology
Week 3	Methods of calcification of mycosis
Week 4	One type of mycosis-superficial mycosis
Week 5	Two type of mycosis –cutaneous mycosis
Week 6	Diseases that causes by Dermatophytes
Week 7	Diagnosis of dermatophytosis
Week 8	Three type of mycosis-subcutaneous mycosis (Sporotrichosis)
Week 9	Three type of mycosis-subcutaneous mycosis (Mycetoma,Chromomycosis)
Week 10	Diagnosis of subcutaneous mycosis
Week 11	Type of mycosis-systemic mycosis (types and diagnosis)
Week 12	Type of mycosis-systemic mycosis (Histoplasmosis ,Coccidioidomycosis)
Week 13	Type of mycosis-systemic mycosis (Paracoccidimycosis,Blastomycosis)
Week 14	Oppportunistic mycosis
Week 15	Antifungal agents
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المناهج الاسبوي يچ للمختبرات

	Material Covered
Week 1	Lab 1: introduction of medical fungi and their media Preparation of fungus cultures
Week 2	Lab 2: slid culture technique , Examination of fungal cultures
Week 3	Lab 3: Methods of sterilization
Week 4	Lab 4: staining of spores
Week 5	Lab 5: superficial mycosis and examination method
Week 6	Lab 6: tinea Niger infection of the outer ear (otomycosis)
Week 7	Lab 7: Dermatophytosis

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Medical mycology .Faayd Mohammed sheriff	Yes
Recommended Texts	Kauffman, C.A., Pappas, P.G., Sobel, J.D. and Dismukes, W.E. eds., 2011. <i>Essentials of clinical mycology</i> (pp. 321-335). New York: Springer New York.	No
Websites	https://link.springer.com/book/10.1007/978-1-4419-6640-7	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتهياز	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 (في الامع الوجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Plant groups		Module Delivery
Module Type	core		<input type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Pln 206		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Maha Ali Abdul-Ameer	e-mail	Maha.ali@qu.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	11/06/2023	Version Number	1

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Botany , Plant Anatomy	First Semester	
Co-requisites module	plant taxonomy	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. Providing students with scientific information about the lowermost divisions of plant kingdom 2. Explaining how plants have evolved from the beginning of life on Earth to the present day. 3. Deepening the students' faith in God Almighty, and contemplating the manifestations of His power, as they are more evident when contemplating the extent of the accuracy biodiversity on earth . {سورة النمل : 88} اللَّهُ الَّذِي آتَقَنَ {صُنْعَ كُلِّ شَيْءٍ} 4. Appreciating the efforts of scientists who made important discoveries in the field of plant biodiversity. 5. To illustrate the major characteristics of the plant kingdom 6. To illustrate the challenges that faces plant life on land 7. To illustrate the adaptations that allowed plants to colonize land 8. To illustrate all seedless plants along with their environmental importance
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. List the major characteristics of the plant kingdom 2. Recognize plants have evolved from the beginning of life on Earth to the present day. 3. Recognize the challenges that faces plant life on land. 4. Describe the adaptations that allowed plants to colonize land 5. list the lower most division of plant kingdom 6. Summarize the major characteristics of each division the plant kingdom 7. Explain the differences between each division of the plant kingdom 8. Explain the life cycle of each division of the plant kingdom 9. Diagnosing some plant species and assigning them to their taxonomic ranks 10. Developing the skill of collecting plant samples from different environments and cultivating them in the laboratory. 11. Realizing the ecological and economic importance of algae and low plants
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <ol style="list-style-type: none"> 1. - Understanding of fundamental concepts in plant groups . 2. Insight into laboratory methods used to investigate plant biodiversity 3. Insight into current, exciting topics in plant biodiversity and related fields. 4. Developing students' skills in reading and evaluating scientific articles. 5. Developing students' skills in writing scientific reports 6. Shedding light on the practical applications of seedless plant species in the agricultural and industrial fields and arousing students' interests in investigating them.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to Follow modern teaching methods, including presentations and videos, along with daily participation and discussions of students in addition to the weekly quizzes to enhance students to study the lectures time by time
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5 min	5% (10)	4 weeks	1-10
	Assignments	2hr	10 % (10)	All weeks	1-10
	Projects / Lab.	1hr	10 % (10)	Continuous	13
	Participation	3hr	5 % (10)	Continuous	All
Summative assessment	Monthly Exam	1hr	10% (10)	12 weeks	13-27
	Final Exam	3hr	60% (50)	16 th Week	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Plant kingdom divisions and plant groups
Week 2	Algae : General introduction

Week 3	Chlorophyta Morphology, reproduction , and alternation of generation
Week 4	Taxonomy and Selected genera from chlorophyta
Week 5	phaeophyta Morphology, reproduction , and alternation of generation
Week 6	Taxonomy and Selected genera from phaeophyta
Week 7	Rhodophyta Morphology, reproduction , and alternation of generation
Week 8	Taxonomy and Selected genera from Rhodophyta
Week 9	Mid-term Exam
Week 10	Bryophyta Morphology, reproduction , and alternation of generation
Week 11	Taxonomy and Selected genera from Rhodophyta
Week 12	Pterydophyta Morphology, reproduction , and alternation of generation
Week 13	Taxonomy and Selected genera from Rhodophyta
Week 14	Gymnosperms, an overview as a prelude for studying seed plants
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: plant sampling
Week 2	Lab 2: Chlorophyta unicellular forms
Week 3	Lab 3: Chlorophyta fillamentous forms
Week 4	Lab 4: Chlorophyta thallos forms
Week 5	Lab 5: phaeophyta
Week 6	Lab 6: Rhodophyta
Week 7	Lab 7: Bryophyta , Bryopsida (mosses)
Week 8	Lab 8: Bryophyta , Marchantiopsida (liverWorts)
Week 9	Lab 9: Bryophyta ,Anthocerotopsida (hornworts).
Week 10	Lab 10: Pterydophyta, Lycopodiopsida
Week11	Lab 11: Pterydophyta, Polypodiopsida
Week 12	Lab 12: Gymnosperms

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Edward G. Bellinger and David C. Sigeo. 2010 ; Freshwater Algae, Identification and Use as Bioindicators. by John Wiley & Sons, Ltd.	No

Recommended Texts	<i>Nabors, Murray W. (2004). Introduction To Botany. Pearson Education, Inc., publishing as Benjamin Cummings, 1301 Sansome St., San Francisco, CA 94111. www.aw-bc.com • https://en.m.wikipedia.org/wiki/Alginic_acid</i>	No
	KARL J. NIKLAS Plant Evolution An Introduction to the History of Life. The University of Chicago Press Chicago and London	No

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	Evolution		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code			
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	4	Semester of Delivery	
Administering Department	Biology	College	SCI
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> To understand the fundamental principles and mechanisms of evolution. To explore the evidence for evolution and its impact on the diversity of life. To analyze the processes of natural selection, genetic variation, and adaptation. To examine the role of evolutionary biology in fields such as medicine and conservation. To critically evaluate scientific theories and hypotheses related to evolution.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>By the end of the module, students should be able to:</p> <ol style="list-style-type: none"> Explain the key concepts and principles of evolution. Evaluate the evidence for evolution from multiple sources, including paleontology, genetics, and comparative anatomy. Understand the mechanisms of natural selection, genetic drift, and gene flow. Analyze patterns of speciation and understand the formation of new species. Apply evolutionary principles to real-world scenarios, such as antibiotic resistance and conservation biology. Critically assess scientific literature and debates related to evolution.
<p>Indicative Contents المحتويات الإرشادية</p>	<ol style="list-style-type: none"> Introduction and historical aspects to Evolutionary Biology Darwinian Evolution and Natural Selection Evidence for Evolution: Fossils and Transitional Forms Genetic Variation and the Role of Mutation Population Genetics and Hardy-Weinberg Equilibrium

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<ol style="list-style-type: none"> Active Learning: Engage in active learning techniques, such as group discussions, hands-on experiments, and problem-solving activities. Actively participating in the learning process helps reinforce understanding and retention of concepts. Visual Aids and Diagrams: Utilize visual aids, such as diagrams, flowcharts, and concept maps, to visualize complex evolutionary processes and relationships. Creating your own visual representations can enhance comprehension and serve as useful study tools. Case Studies and Real-World Examples: Explore case studies and real-world examples that demonstrate evolutionary concepts in action. Analyze specific examples of adaptation, natural selection, and speciation to deepen your understanding of how evolution works. Collaborative Learning: Form study groups or join online forums to collaborate with peers. Discussing and debating evolutionary topics with others can provide different perspectives and help clarify misconceptions. Sharing knowledge and teaching concepts to others also reinforces your own understanding. Use Online Resources and Interactive Tools: Take advantage of online resources specifically designed for studying evolution. Websites, interactive simulations, and virtual labs can provide additional visual and interactive learning.
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experiences. Online quizzes and practice exercises can help assess your knowledge and identify areas that need further review.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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 #7, #10
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #8
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #9
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	Week 1: Introduction to Evolutionary Biology and Key Concepts
Week 2	Week 2: Darwinian Evolution and Natural Selection
Week 3	Week 3: Evidence for Evolution: Fossils and Transitional Forms
Week 4	Week 4: Genetic Variation and Mutation
Week 5	Week 5: Population Genetics and Hardy-Weinberg Equilibrium
Week 6	Week 6: Speciation and Patterns of Diversification
Week 7	Week 7: Macroevolution and the Tree of Life
Week 8	Week 8: Adaptation and the Evolution of Complex Traits

Week 9	Week 9: Coevolution and Mutualism
Week 10	Week 10: Human Evolution and Comparative Primatology
Week 11	Week 11: Evolutionary Medicine: Antibiotic Resistance and Disease
Week 12	Week 12: Evolution and Conservation Biology
Week 13	Week 13: Evolutionary Psychology and Human Behavior
Week 14	Week 14: Review and Assessment
Week 15	Week 15: Final Review and Assessment
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Evolutionary Biology and Scientific Methods
Week 2	Lab 2: Fossil Analysis and Interpretation
Week 3	Lab 3: Genetic Variation and Mutation Analysis
Week 4	Lab 4: Population Genetics Simulation and Hardy-Weinberg Equilibrium
Week 5	Lab 5: Speciation and Phylogenetic Analysis
Week 6	Lab 6: Comparative Anatomy and Evolutionary Relationships
Week 7	Lab 7: Evolutionary Adaptations in Organisms
Week 8	Lab 8: Coevolutionary Relationships in Ecosystems
Week 9	Lab 9: Human Evolution and Comparative Primatology
Week 10	Lab 10: Antibiotic Resistance and Evolutionary Medicine
Week 11	Lab 11: Conservation Biology and Evolutionary Approaches
Week 12	Lab 12: Evolutionary Psychology Experiments
Week 13	Lab 13: Field Trip for Evolutionary Studies
Week 14	Lab 14: Research Project or Case Study Analysis
Week 15	Lab 15: Final Review and Assessment

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Futuyma, D. J., & Kirkpatrick, M. (2017). Evolution (Fourth Edition). Sinauer Associates, Inc.	No
Recommended Texts	Ridley, M. (2020). Evolution (Fourth Edition). Wiley.	No
Websites	https://evolution.berkeley.edu	

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	Entomology taxonomy		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Enm 207		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name Hanaa Rahman Lefta	e-mail	E-mail hanaa.rahman@qu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	Principle of class entomology serves as ideal text for courses in general entomology with laboratory sections written for student who have completed an introductory course in biology , it provides an in- depth treatment of insect classification , including keys for identification for over for hundred families and understand of distribution of insects .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	It enhance our understanding of the common insects are discussed as well as species found elsewhere in the world ,ke for identification of families , discussion of the biology of families insect defintation relation between entomology and other science , POSITION OF INSECT classification from animal science
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. The conducts studies of class entomology related to all aspects of ecology related of insects carry out studies on the identification and taxonomy of this organs , insect class or hexapod largest class of phylum arthropods insect , Attain a solid foundation in insect biology, including general entomology biodiversity, ecology effects on insects ,
	Classification entomology provides crucial insight into the intricate entomology community that excite within class insects , by studying indicative content of these field researches gian a deeper understanding of insects diversity , followed by coverage of each order in terms of general biology key for identification of families and discussion of the biology of families all insects orders and over four hundred families of insects are treated .

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem)	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
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الحمل الدراسي المنتظم للطالب خلال الفصل			
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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	Introduction – of class entomology
Week 2	taxonomy
Week 3	Phylum orthopoda
Week 4	Sub class Apterygota
Week 5	Order protura , diplura , thysanura , collembola
Week 6	Sub class pterygota
Week 7	Division exopterygota
Week 8	Order phemeroptera ,odonata
Week 9	Order plecoptera , orthoptera , lattodae
Week 10	Order mantodae , phasmidae , zoraptera , mallophaga , anoplura , hemiptera
Week 11	Division Endopterygota

Week 12	Order neuropteran , diptera
Week 13	Order Lepidoptera
Week 14	Order hymenoptera , coleoptera
Week 15	Order siphonoptera
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction of class entomology
Week 2	Lab 2:scientific name
Week 3	Lab 3: class insect
Week 4	Lab 4: sub class aptrygota
Week 5	Lab 5: order protura , thysanura , protura , colempola
Week 6	Lab 6: collection and isolation of aptrygota and classification
Week 7	Lab 7: division ptrgota
Week 8	Lab 8:exoptrygota
Week 9	Lab 9:classification order of exoptrygota
Week 10	Lab 10: collection insect and isolation
Week 11	Lab 11: division endoptrygota
Week 12	Lab 12:classification order of endoptrgota
Week13	Lab 13collection insect s
Week 14	Lab 14: isolation insects
Week 15	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Entomology	Yes
Recommended Texts	Principle of general entomology	No
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	Comparastive anatomy (chordate)		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Cho 404		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	4	Semester of Delivery	
Administering Department	Type Dept. code	College	type College code
Module Leader	Rasha Muzahem Hatem	e-mail	E-mail :Rasha.albukhlate@qu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<p>Comparative anatomy It is a branch of zoology responsible for studying the differences and similarities that exist in the morphology of different organisms. This discipline is closely related to descriptive morphology and is used to develop studies dealing with relatedness between species</p> <p>The module of comparative anatomy is geared towards the adaptive changes that organisms undergo during development; Thus, the contributions of this discipline have been essential to the evolutionary study of vertebrate species</p> <p>Naturalist Charles Darwin (1809-1882) used comparative anatomy to prove that the similarities between different animals are due to the fact that their structures are inherited from a very distant common ancestor.</p> <p>This means that some vertebrate organisms share similar morphology because they come from the same ancestor. However, this morphology has undergone significant changes over the years, as it has had to adapt to different environments.</p> <p>For example, Darwin considered the similarities that exist between the skeleton of a dolphin and a human, despite the fact that both bodies are designed to perform different functions, such as walking or swimming.</p>
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>Upon completion of this course the student will be able to:</p> <ul style="list-style-type: none">• Compare the anatomical structures of vertebrates to find out the similarities and differences between them. This anatomical comparison helps link these animal groups together.• Understanding the importance of comparative anatomy as a philosophical science that describes and compares the different organs of vertebrates. The student will also have the ability to anatomy to learn the comparative anatomy of body systems.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>The course is concerned with the anatomical study of the various animal systems with a comparative study of the following systems in different groups of vertebrates: the outer wall (skin) - the digestive system - the respiratory system - the skeletal system - the nervous system - the circulatory system - the urogenital system.</p> <p>The intended educational outcomes from studying the course</p> <ol style="list-style-type: none">1. The ability to understand the different body compositions of living organisms2. It enables him to dissect the diverse organisms and the ability to identify the different organs3. Clarifying the concepts of anatomical, phenomenological and physiological study of the different classes of the animal kingdom4. Studying the comparison of different organs and organs <p>The comparative anatomy course studies the symmetry, similarity, difference, and origin of some vertebrate organs, with a comparison of the anatomical structures of the vertebrate animal systems (the skin, skeletal, muscular, and circulatory systems), focusing on philosophical trends and highlighting in</p>

	particular how the anatomical structure adapts in response to functional needs and requirements based on differences. It should be noted He notes that anatomy can also focus on the study of biological processes such as the development of life (by studying embryos) or the diseases that individuals of a species can suffer from.
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities 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	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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)		
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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Definition of chordates, study of their characteristics and origin, and classification of protochordata and euchordates
Week 2	The integumentary system(skin): the formation, functions and structure of the skin in various chordates
Week 3	Skin derivatives (glands, scales, scales, feathers, hair, nails, claws, hooves and horns)
Week 4	The digestive system, general structure , The structure of the mouth alimentary canal and oral cavity
Week 5	Comparison of the mouth in protochordates amphaxious and euchordata cyclostomata and Comparative anatomy of organs in different chordates
Week 6	The respiratory system and nasal passages
Week 7	Comparative anatomy of taxonomic aggregates: gills, swim bladders, and lungs
Week 8	exam
Week 9	Circulatory system :Vascular, lymphatic and vascular system of origin and composition
Week 10	Comparative anatomy of all taxonomic groups of an organ in circulatory system
Week 11	The excretory system, the formation of the kidneys and their ducts, and the maintenance of water balance
Week 12	Reproductive system, gonads and gonads
Week 13	Respiratory system in all taxonomic groups (comparative anatomy)
Week 14	Skeletal system in all taxonomic groups (comparative anatomy)
Week 15	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
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	Material Covered
Week 1	Lab 1: Chordates, their definition, evolutionary foundations, characteristics and origin
Week 2	Lab 2: Classification of chordata
Week 3	Lab 3: Integumentary system (skin)
Week 4	Lab 4: Digestive system
Week 5	Lab 5: Respiratory system
Week 6	Lab 6: Circulatory system
Week 7	Lab 7: The excretory system
Week 8	Lab 8: Reproductive system
Week 9	Lab 9: Oral cavity
Week 10	Lab 10: Comparative anatomy of the organs in various chordates
Week 11	Lab 11: Skin derivatives (glands, scales, scales, feathers, hair, nails, claws, hooves and horns)
Week 12	Lab 12: Comparative anatomy of taxonomic groups of chordates
Week 13	Lab 13: Types of gills and their comparative anatomy
Week 14	Lab 14: Comparative anatomy of the lymphatic system
Week 15	Lab 15: Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Kardong, V.K.(2014): Vertebrates; Comparative anatomy, Function, Evolution. Kardong 7th edition. McGraw-Hill Science, U.S.A	Yes
Recommended Texts	Kent, G.K. and Robert, C.K.(2009): Comparative anatomy of the vertebrates. 9th edition. McGraw-Hill Science, U.S.A.	No
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	Bacterial diagnosis		Module Delivery
Module Type	Core		<input type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Bdi 401		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	4	Semester of Delivery	
Administering Department	Biology	College	Science
Module Leader	Abbas Mayar Hezam	e-mail	Abbas.hezam@qu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	03/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none">1. Bacteriology deals with bacteria and disease and how these bacteria interact within the cell2. To emphasize the molecular mechanisms of bacterial diagnosis3. Recognize and interpret the structural and functional aspects of molecules and their interactions that give rise to the supramolecular complexes such as organelles and cells and how those complexes function within organisms.4. To provide with the core principles of bacteriology.5. To gain higher level thinking skills that is necessary for scientists.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.</p> <p>Upon successful completion of the module a student will be able to:</p> <ol style="list-style-type: none">1. Describe the basic structure and shape of bacteria and discriminate between them2. Identify the principles of bacteriology, and explain how they relate to other sciences.3. Describe the main principles of methods for isolation and diagnosis of bacteria.4. Build and interpret phylogenetic trees representing evolutionary relationships among organisms.5. Describe and discuss applications of molecular biology, including the use of bioinformatics and genomics.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <ul style="list-style-type: none">- Description and integration the structure of bacteria- microbial Genetics- Gene expression.- Basic methods used in bacterial diagnosis- How Bacteriology relates to other fields of science.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>A grounding of Bacteriology is provided through a combination of recorded lectures (screencasts) and demonstrations. These will cover various aspects of basic Bacteriology including shape and size; cell wall; cytoplasm; molecular evolution; typing and diagnostics. A summative assessment will be carried out via a timed Quizstyle test on Moodle at the end of the module. This assessment does not count toward the grade.</p>
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعياً	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعياً	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5 min	5% (10)	4 weeks	1-10
	Assignments	2hr	10% (10)	All weeks	1-10
	Projects / Lab.	1hr	10% (10)	Continuous	13
	Participation	3hr	5% (10)	Continuous	All
Summative assessment	Monthly Exam	1hr	10% (10)	12 weeks	13-27
	Final Exam	3hr	60% (50)	16 th Week	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction
Week 2	Structure of bacteria
Week 3	Size of bacteria
Week 4	Pathogenesis of bacterial infections
Week 5	Lab technique in epidemiology
Week 6	Enterobacteriaceae
Week 7	Vibrio
Week 8	Campylobacter, and Helicobacter
Week 9	Spore former Gram positive bacilli
Week 10	Gram positive cocci (staph)
Week 11	Genus: Streptococcus

Week 12	THE GRAM NEGATIVE COCCI and related organisms
Week 13	Neisseria
Week 14	Neisseria gonorrhoeae
Week 15	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: E. coli and Klebsiella pneumoniae
Week 2	Lab 2: Proteus
Week 3	Lab 3: Pseudomonas
Week 4	Lab 4: Salmonella and Shigella
Week 5	Lab 5: Staphylococcus and Streptococci
Week 6	Lab 6: Vibrio cholerae and Neisseria
Week 7	Lab 7: Bacillus and Clostridium

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Jawetz Medical Microbiology 25th Edition	No
Recommended Texts	Review of Medical Microbiology and Immunology	No

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	Molecular Biology		Module Delivery
Module Type	Core		<input type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input checked="" type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Mol 402		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	4	Semester of Delivery	
Administering Department	Biology	College	Science
Module Leader	Ghaidaa Jihadi Mohammed	e-mail	ghaidaa.mohammed@qu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	03/06/2023	Version Number	1.0

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	<ol style="list-style-type: none">1. Molecular biology deals with nucleic acids and proteins and how these molecules interact within the cell to promote proper growth, division, and development. It is a large and ever-changing discipline.2. To emphasize the molecular mechanisms of DNA replication, repair, protein synthesis ,Genetic Engineering and Gene Cloning etc.3. Recognize and interpret the structural and functional aspects of molecules and their interactions that give rise to the supramolecular complexes such as organelles and cells and how those complexes function within organisms.4. To provide with the core principles of molecular biology.5. To gain higher level thinking skills that is necessary for scientists.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.</p> <p>Upon successful completion of the module a student will be able to:</p> <ol style="list-style-type: none">1. Describe the basic structure and biochemistry of nucleic acids and proteins and discriminate between them2. Identify the principles of DNA replication, transcription and translation and explain how they relate to each other.3. Describe the main principles of methods for preparation of DNA, such as DNA extraction, cloning, transformation and PCR, and analyse their applications.4. Describe the main principles of methods for analysis of DNA, such as hybridization, restriction analysis and DNA sequencing and analyse their applications.5. Build and interpret phylogenetic trees representing evolutionary relationships among organisms.6. Describe and discuss applications of molecular biology, including the use of bioinformatics and genomics.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <ul style="list-style-type: none">- Description and integration of the biochemistry of nucleic acids- Genetic diversity.- Gene expression.- Basic methods used in molecular biology.- How molecular biology relates to other fields of science.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>A grounding of molecular biology is provided through a combination of recorded lectures (screencasts) and demonstrations. These will cover various aspects of basic molecular biology including nucleic acids and proteins; gene expression; DNA analysis; gene cloning; molecular evolution; typing and diagnostics. A summative assessment will be carried out via a timed Quizstyle test on Moodle at the end of the module. This assessment does not count toward the grade.</p>
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5 min	5% (10)	4 weeks	1-10
	Assignments	2hr	10 % (10)	All weeks	1-10
	Projects / Lab.	1hr	10 % (10)	Continuous	13
	Participation	3hr	5 % (10)	Continuous	All
Summative assessment	Monthly Exam	1hr	10% (10)	12 weeks	13-27
	Final Exam	3hr	60% (50)	16 th Week	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Molecular Biology
Week 2	Nucleic Acids
Week 3	Forms of DNA
Week 4	Types of RNA
Week 5	DNA Replication
Week 6	Transcription
Week 7	Translation
Week 8	Protein Structure ,Function ,Types and The relationship with gene

Week 9	Genetic Engineering
Week 10	Applications of Genetic Engineering
Week 11	Gene Cloning
Week 12	Cloning Vectors
Week 13	Types of Cloning
Week 14	Linkage and Crossing Over
Week 15	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Equipment & Materials commonly used in a laboratory
Week 2	Lab 2: Buffer Solution
Week 3	Lab 3: Cell Disruption Methods
Week 4	Lab 4: Isolation and purification of nucleic acids
Week 5	Lab 5: Polymerase chain reaction
Week 6	Lab 6: Countification of nucleic acids concentrations
Week 7	Lab 7: Agarose gel electrophoresis

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Cell and Molecular Biology: Copyright 2016 ;Second edition; Gerald Bergtrom	No
Recommended Texts	The Cell: A Molecular Approach ;Eight edition , Geoffrey M. Cooper-2019	No

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	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded

(0 – 49)	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	Animal physiology		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Ani 310		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	Semester of Delivery	2
Administering Department	Biology	College	sci
Module Leader	آلاء محمد حسون	e-mail	alaa.mouhammed@qu.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<p>This course is designed so that the student of third year will achieve a general understanding about:-.</p> <ol style="list-style-type: none"> 1. - Normal Functions Of Different Systems In Mammals . 2. Normal Behavior Of Animals 3. Knowledge And Understanding Of The Normal Physiological Basis Of Organ Function And Homeostasis.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>*Knowledge And Understanding</p> <ol style="list-style-type: none"> 1.The Student Will Have A Comprehensive Knowledge And Understanding On Normal Functions Of Cell Organelles 2.Functions Of Different Body Systems And Interaction Between Them During Different Physiological Conditions 3. Knowledge About The Interaction Between Body Systems During Different Physiological Conditions 4. The Interaction Responses Between Different Body Systems During Different Non Physiological Conditions 5.Know The Type And Methods Of Completion .Laboratory Tests For Different Blood parameter 6 .How To Read And Analyze The Laboratory Tests Results
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <ul style="list-style-type: none"> + Introduction an cell and energy : included Physiology subdivided, General physiology, Specific physiology, comparative physiology, Characteristics of living things, energy conservation law, Releases energy in cells or Cellular respiration(1-Glycolysis -2- Kreb's cycle 3- Respiratorychain phosphorylation). (2h) + Thermal regulation and Metabolism: Regulation of body temperature (physical and chemical regulation), animals are divided into two groups: Poikilothermic and Homeothermic , Mechanism activated by cold and heat Disturbances in thermoregulation, Metabolic rate and methods of measurement (direct and indirect), The factors effect metabolic value, Factors affecting the basal metabolic rate, Resistant to extreme temperatures(4h) + Circulatory system in human: Blood vascular system and Lymphatic vascular system, Pulmonary and Systemic Circulations , The origin and transmission of the pulse and Pacemaker, Electrical events of the heartbeat, Electrocardiography, Cardiac units(Cardiac out put and minute volume), heart beat rat, Factors affecting blood pressure.(4h) + Digestion &absorption physiology: Alimentary tract or gastrointestinal tract Accessory gland: Included salivary gland, pancrease and liver, Salivary glands divided in to three types depended on the localization, Gastric juice components, Control of gastric secretion, Gastric Secretion Stage, pancreatic Secretion and digestive enzymes, Control of pancreatic

	<p>secretion, Intestinal Secretion, Absorption, Regulating the amount of food intake and the centers of hunger and satiety.(4h)</p> <ul style="list-style-type: none"> + Respiration Physiology: included Pulmonary ventilation , Pulmonary and internal respiration gases, Cellular respiration catabolism, Mechanism of respiration ((inhalation & exhalation) with Boyle's law, Respiration Volumes and lung capacities by respirometer, A number of terms are used to describe the rate and depth of breathing, Alveolar ventilation, Oxygen and CO₂ Transport, Oxygen Saturation (Dissociation) Curve with Bohr effect(4h) carbon dioxide transport ,Regulation of Respiration (Nervous control of Respiratory Movements and Chemical Regulation of Respiration). + Osmoregulation and urinary system: Water balance, Extracellular fluid and Intracellular fluid Regulation of Body Fluid or Homeostasis , Exchange between different bodily fluids, Exchange between serum and interstitial fluid, Acid-Base Balance , control on pH (Buffer ,respiratory and kidneys control) , Microscopic structure of kidneys including nephron ,kidney's functions (filtration, reabsorption and secretion) ,hormonal control.(4h) + Endocrinology: chemical messenger (hormone), classification of hormone depended on chemical structure, comparison between exocrine and endocrine ,neuro-endocrine co-ordination. Target cell,receptors , pituitary hormones(4h) <p>The laboratory portion of this course will emphasize introductory exercises, experimental techniques, and data collection of physiological variables (18h)</p>

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>Type something like: Lectures and practical of every topic in the course. Collection of some information from textbooks.</p> <p>The main strategy that will be adopted in delivering this module is presentation and Discussion sessions with the participation of students in the interpretation and analysis of some basic concepts of physiology, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving collected blood sample and estimation some physiological parameter.</p>

Student Workload (SWL)			
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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	Introduction , Physiology subdivided, cell and energy , Releases energy in cells or Cellular respiration
Week 2	The physiological effect of heat and its regulation
Week 3	Metabolism and basal metabolism
Week 4	Circulation system physiology , The Conducting System of the Heart
Week 5	Cardiac cycle , Cardiac units, <i>Blood pressure</i>
Week 6	Digestion & absorption physiology ,mechanical digestion, Salivary glands & Salivation,
Week 7	Monthly- Exam
Week 8	Stomach digestion, <i>Control of gastric secretion, pancreatic Secretion, Liver, centers of hunger and satiety</i>
Week 9	<i>Respiration Physiology, Mechanism of respiration, Respiration Volumes and lung capacities, Alveolar ventilation</i>

Week 10	Transport Of Oxygen Oxygen Capacity, transports O ₂ in the blood, Forms of carbon dioxide in the blood, <i>Regulation of Reapioration.</i>
Week 11	Urinary system physiology, Osmoregulation, Regulation of Body Fluid or Homeostasis, Exchange between different bodily fluids
Week 12	<i>Acid-Base Balance</i> , pH control mechanisms, Kidney and it principle function, hormonal regulation
Week 13	Kidney and it principle function, hormonal regulation.
Week 14	Introduction to endocrinology and chemical co-ordination
Week 15	chemical nature of hormone ,type of endocrine gland ,
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: The Blood (Blood functions , Blood Components, Blood Cells ,Anticoagulation) Practical part /Conducting a blood separation experiment to identify cells and components using anticoagulant tubes and centrifuges
Week 2	Lab 2: Osmosis (Erythrocyte fragility,- types of tonicity) Practical part / conducting an experiment to Osmotic fragility Tests
Week 3	Lab 3: conducting an experiment to Red Blood Cells (RBCs) Count
Week 4	Lab 4: conducting an experiment to White blood cell (WBCs) count
Week 5	Lab 5: Measurement of arterial blood pressure methods to measurement of ABP(Direct method , Indirect method ,Palpatory method and Auscultatory method) Practical part / conducting an experiment to measure blood pressure using the pulse and auscultation method using the sphygmomanometer
Week 6	Lab 6: The ABO Blood Group (-Agglutinins of ABO System-Rhesus factors (RH) factor-Clinical Significance of Rh factor-Agglutination) Practical part/detection of ABO Blood Group
Week 7	Lab 7: Bleeding Time And Clotting Time(Abnormal Results of A Bleeding Time Test,methods based on the length and location of the incision:1- Duke's Method 2- IVY method Practical part/ detection of A Bleeding Time by Duke's and IVY methods
Week 8	Clotting Time Test
Week 9	Blood hemoglobin and its methods of measurement: 1-Sally device method: 2-Determination of hemoglobin by Drabkin Method

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Principles of Animal Physiology , 2014 • 53.45 MB • English by Christopher D. Moyes & Patricia Schulte	No
Recommended Texts	Human Physiology by Wikibooks contributors ,2007	No
Websites	Essential Haematology A. V. Hoffbrand , Sixth Edition ,University of Birmingham Birmingham, UK,2010	

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
<p>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.</p>				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Computer science	Module Delivery	
Module Type	core	<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	
Module Code	Com 110		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1		
Administering Department	Biology	College	SCI
Module Leader		e-mail	
Module Leader's Acad. Title	Assis. Lect.	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	01/06/2023	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	<p>The main objectives of the course are to:</p> <ol style="list-style-type: none"> 1. Introduce students to the digital world by considering fundamental computer hardware and the most popular microcomputer applications. 2. Explain systems and applications software. 3. Introduce and practice file management, data storage and security principles. 4. Consider basic operating system features (using the Windows environment). 5. Give students hands-on experience on popular application software packages, which may include word processing, electronic spreadsheets,

	database management, presentation graphics, statistical applications and other.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>After completion of the course students are expected to be able to:</p> <p>Understand basic computer hardware fundamentals.</p> <p>Understand and practice file management principles.</p> <p>Become proficient in the use of the windows environment.</p> <p>Create word processing documents and understand word processing fundamentals. Use an electronic spreadsheet to solve relevant problems.</p> <p>Prepare graphs to present important facts.</p> <p>Use presentations graphics software to prepare attractive presentations.</p>
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p><u>Part A - Identify the hardware components of a computer.</u></p> <ul style="list-style-type: none"> • Lists the hardware components such as processor, memory, disk, main board, etc. • Explains the features (speed, capacity, etc.)of the hardware components of a computer. • Explains the relationships between the components of a computer and how data are transferred among the components. <p><u>Part B - identify the periferal devices outside computer.</u></p> <ul style="list-style-type: none"> • Uses computer using input devices, such as keyboard and mouse. • Transfers data outside the computer using output devices, such as screen and printer. • Saves files to removable devices and loads files from removable devices. • Connects to the Internet using network cards. <p><u>Part C - identify the softwares running on a computer.</u></p> <ul style="list-style-type: none"> • Identifies BIOS and changessettings in BIOS. • Listsjobs of operating system. • Uses the Windows and Linux operating systems. • Tests the performance of hardware components on some specific programs.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Be able to start and exit a Windows application and utilize sources of online help. Identify common on-screen elements of Windows applications, change application settings and manage files within an application. Perform common editing and formatting functions. Perform common printing functions
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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)	Continuou s	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Definition of computer and its historical development
Week 2	Definition of hardware and its structure
Week 3	Processor, hard disk, memory, mainboard, ROM memory
Week 4	Operating systems. Disk and file management. Other operations. (Using WINDOWS)
Week 5	Input devices: Keyboard and mouse
Week 6	Output devices: Screen and printer
Week 7	Introduction to Embedded Systems
Week 8	Digital Systems
Week 9	Control Panel
Week 10	Drives
Week 11	Other peripheral devices
Week 12	Poweringthe computer on
Week 13	Network and application software
Week 14	BIOS and BIOS settings
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: hardwares
Week 2	Lab 2: Windows installation
Week 3	Lab 3: Processor, hard disk
Week 4	Lab 4: memory, mainboard, ROM memory
Week 5	Lab 5: Control Panel
Week 6	Lab 6: Screen and printer
Week 7	Lab 7: Network and application software

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	COMPUTER HARDWARE	No
Recommended Texts	COMPUTER HARDWARE	Yes
Websites	https://nou.edu.ng/coursewarecontent/CIT%20210%20-%20Computer%20Hardware.pdf	

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	Antibiotics		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Ant 411		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	4	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr. Firas Sarhan Abed	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. Explain what antibiotic resistance genes (ARGs) and antibiotic resistant bacteria (ARBs) are and the origins of ARGs (the resistome).2. Describe the various mechanisms for resistance and important classes of resistance genes.3. Compare and analyze diverse viewpoints on controversial issues related to sources of ARGs/ARBs in relationship to humans, animals, and the environment (One Health).4. Summarize how several different human practices influence the evolution/ecology of ARGs/ARBs.5. Explain how the evolution of resistance differs between developed and developing countries, how the two are interconnected, and how ARGs/ARBs are transmitted around the world.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.</p> <ol style="list-style-type: none">1. Develop an in-depth understanding of the basic principles of microbial resistance to antibiotics and the drivers of its development.2. Demonstrate a broad awareness and understanding of the impact of antimicrobial resistance on individuals, society and environment.3. Demonstrate an understanding of social aspect of AMR.4. Demonstrate the ability to discuss and present relevant topics with peers and staff.5. Discuss the role that agriculture, aquaculture, food animals and food play in the transmission of ARGs/ARBs and give specific examples to illustrate this.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Antimicrobial resistance continues to present an urgent threat, which challenges our current way of life. This course is designed to address the emerging concepts around the interconnected routes of the development and transmission of antimicrobial resistance. As such, this course covers the "One-Health" and "bench-to-bedside" themes where it links the biological basis of the pathogen and host response, the sociological attitudes towards antibiotic use and prescription and the challenges faced in the use of these drugs in the clinical and non-clinical context (human and veterinary). Importantly, this course is complementary to existing material being delivered within the other elective courses as we address distinctly different concepts to "Diagnostics and Therapeutics for Infectious Disease" and "Global Health and Infectious Diseases.</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	(1) to improve awareness and understanding of antimicrobial resistance (2) to strengthen knowledge through surveillance and research (3) to reduce the incidence of infection (4) to optimize the use of antimicrobial agents
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	5% (2)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	5% (2)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	5% (2)	Continuous	All
	Report	1	5% (2)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	40 % (40)	8	LO #1 - #7
	Final Exam	3hr	60% (60)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Definition of antibiotics - characteristics of antibiotics - a brief history
Week 2	Penicillins and cephalosporins
Week 3	Tetracyclines-Aminoglycosides
Week 4	macrolides
Week 5	Peptides antibiotics – Glycopeptides
Week 6	Ansamycins - Miscellaneous
Week 7 Week 8	Mechanism of action of antibiotics Inhibition of cell wall synthesis Inhibition of Cell membrane synthesis
Week 9 Week 10	Inhibition of nucleic acid synthesis Inhibition of folate metabolism
Week 11	Inhibition of protein synthesis
Week 12	Antibiotic Resistance
Week 13 Week 14	In vivo antibiotic efficacy and resistance- Pharmacokinetics- Pharmacodynamics
Week 15	Uses of antibiotics - in different fields(Non therapeutic uses of antibiotics)

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Instructions and introduction
Week 2	A historical perspective
Week 3 Week 4	Antibiotic susceptibility testing
Week 5 Week 6	The diffusion method
Week 7 Week 8	E – Test .
Week 9 Week 10	Well Method.
Week 11 Week 12	Mechanisms of combination of antibiotics.
Week 13 Week 14	Detection of Microbial antagonism in environment

Week 15	β -lactamase enzymes.	
Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts		Yes
Recommended Texts		No
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
<p>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.</p>				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

معلومات المادة الدراسية			
Module Delivery	Biostatistics		عنوان المقرر
<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input checked="" type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar	Core		نوع المقرر
	Sta 111		رمز المقرر
	5		عدد الوحدات
	125		عدد الساعات
2	Semester of Delivery	1	مستوى المقرر
Type College Code	College	Type Dept. Code	Administering Department
E-mail	e-mail	Name	Module Leader
Ph.D.	Module Leader's Qualification	Professor	Module Leader's Acad. Title
E-mail	e-mail	Name (if available)	Module Tutor
E-mail	e-mail	Name	Peer Reviewer Name
1.0	Version Number	01/06/2023	Scientific Committee Approval Date

العلاقة مع المواد الدراسية الأخرى			
	الفصل الدراسي	-	الممهد
	الفصل الدراسي	-	المقرر المشترك

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p>- التعرف على المفاهيم الأساسية للإحصاء والاحصاء الحياتي - التعرف على علاقة الاحصاء والاحصاء الحياتي بالعلوم الاخرى وخاصة العلوم البيولوجية. - التعرف على كيفية جمع البيانات للدراسة التي سجريها الباحث في دراسته. - معرفة تطبيقات الاحصاء والاحصاء الحياتي في مختلف العلوم. - القدرة على استخدام الاحصاء في حل المعضلات الحياتية والبيئية.</p>	<p>أهداف المادة الدراسية</p>
<p>أ-المعرفة والفهم 1- اكتساب الخبرة والمعرفة في جمع البيانات الاحصائية . 2- حلول المشاكل الجداول الاحصائية . 3- إيجاد مقاييس التشتت والنزعة المركزية. ب-- المهارات الخاصة بالموضوع ب1- التدريب الصيفي ب2- تقارير علمية ب3- بحوث تخرج ج- مهارات التفكير ج1- تطوير قدرة الطالب للعمل على أداء الواجبات وتسليمها في الموعد المقرر. ج2- التفكير المنطقي والاحصائي في إيجاد النتائج الاحصائية لدراسة المشكلة ومدى تأثير الظواهر على تلك الدراسة. ج3- تطوير قدرة الطالب على الحوار والمناقشة.</p>	<p>مخرجات التعلم للمادة الدراسية</p>
	<p>المحتويات الإرشادية</p>

استراتيجيات التعلم والتعليم

<ul style="list-style-type: none"> ● إدارة المحاضرة على نحو يشعر بأهمية الوقت. ● تشجيع الإجابات الصحيحة ومناقشة الإجابات الخاطئة بدلا من اعتماد العقاب فيها . ● تكليف الطالب ببعض الأنشطة والواجبات الجماعية. ● تخصيص نسبة من الدرجة للأنشطة الجماعية. ● المشاركة الفاعلة في قاعة الدرس دليل التزام الطالب وتحمله المسؤولية. ● الالتزام بالموعد المحدد في تقديم الواجبات والبحوث. <p>تعتبر الاختبارات الآتية , الفصلية والنهائية عن الالتزام والتحصيل المعرفي والمهاري.</p>	<p>استراتيجيات</p>
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الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	61	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
نتيجة التعلم	اسبوع	الوزن (الدرجة)	الوقت / العدد		
LO #1, #2 and #10, #11	5 and 10	10% (10)	2	اختبارات	التقييم التكويني
LO #3, #4 and #6, #7	2 and 12	10% (10)	2	مهام	
All	Continuous	10% (10)	1	مشاريع	
LO #5, #8 and #10	13	10% (10)	1	تقرير	
LO #1 - #7	7	10% (10)	2hr	اختبار مصف الفصل	التقييم الملخص
All	16	50% (50)	3hr	اختبار نهائي	
		100% (100 Marks)	Total assessment		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
الاسبوع	Material Covered
الاول	المقدمة في الاحصاء , تعريف الاحصاء و الاحصاء الحياتي.
الثاني	علاقة الاحصاء و الاحصاء الحياتي بالعلوم البيولوجية.
الثالث	تقسيم علم الاحصاء و المعالم و الرموز الاحصائية.
الرابع	بعض المفاهيم الاحصائية .
الخامس	طرق جمع البيانات , مصادر جمع البيانات, والاستمارات الاحصائية.
السادس	طرق عرض وتلخيص البيانات : العرض الجدولي للبيانات , التوزيع التكراري, التوزيع الهندسي للبيانات.
السابع	الخطوات العامة لتكوين جدول توزيع تكراري.

الثامن	المقاييس الاحصائية: مقاييس النزعة المركزية او مقاييس التمرکز او المتوسط 1- (المتوسط الحسابي , المتوسط الفرضي , المتوسط الحسابي المرجح او الموزون)
التاسع	مقاييس النزعة المركزية: الوسيط , المنوال (للبيانات المبوبة و الغير مبوبة).
العاشر	مقاييس التشتت : مقاييس التشتت (المدى , الانحراف المتوسط) لبيانات المبوبة , والبيانات الغير مبوبة.
الحادي عشر	التباين , الانحراف المعياري, الخطأ القياسي.
الثاني عشر	تعريف معامل الارتباط , حساب معدل الارتباط , معامل الارتباط البسيط و الرتب.
الثالث عشر	تعريف معامل الانحدار , حساب معمل الانحدار
الرابع عشر	مبادئ الاحتمالية : الاحتمال الشرطي والاحتمال التوافقي .
الخامس عشر	التحليل الاحصائي, الوحدة التجريبية, المعاملات التكرارات.

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

Learning and Teaching Resources		
مصادر التعلم والتدريس		
متوفرة بالمكتبة	Text	
نعم	1- الاحصاء تأليف محمود حسن وامير المشهداني - جامعة بغداد	المصادر المطلوبة
نعم	1- مبادئ الاساليب الإحصائية , تأليف د.عبد العزيز فهمي هيكل, ١٩٦٦ , دار النهضة العربية , بيروت	المصادر الموصى بها
	www. Freescience.info/math	رابط على الانترنت

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 (فيد 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	Fundamentals of microbiology		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Fun 102		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	1	Semester of Delivery	
Administering Department	Biology	College	SCI
Module Leader	Abbas Mayar Hezam	e-mail	E-mail
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D. microbiology
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	<ol style="list-style-type: none">1. To introduce students to the fundamentals of microbiology and its significance in various fields.2. To develop an understanding of microbial diversity, structure, and function.3. To explore the principles of microbial growth, metabolism, and genetics.4. To enhance knowledge of microbial interactions, pathogenesis, and host-microbe relationships.5. To promote critical thinking and problem-solving skills in the context of microbiology.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>By the end of this module, students should be able to:</p> <ol style="list-style-type: none">1. Explain the fundamental principles and concepts of microbiology.2. Identify and classify different types of microorganisms based on their characteristics and properties.3. Describe the mechanisms of microbial growth, metabolism, and reproduction.4. Analyze and evaluate microbial interactions, including symbiotic and pathogenic relationships.5. Apply knowledge of microbiology to real-world scenarios and problem-solving.
Indicative Contents المحتويات الإرشادية	<ol style="list-style-type: none">1. Read and understand relevant textbook chapters and scientific articles on microbiology.2. Engage in active note-taking and summarizing key concepts from lectures and readings.3. Participate in group discussions and debates on microbiological topics to enhance understanding and critical thinking.4. Utilize online resources, such as interactive tutorials and educational videos, to reinforce learning.5. Engage in hands-on laboratory activities and experiments to apply theoretical knowledge and develop practical skills in microbiology.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<ol style="list-style-type: none">1. Lectures: Instructor-led lectures to introduce and explain key concepts and principles of microbiology.2. Group Discussions: Facilitate student engagement and critical thinking through group discussions on microbiological topics, encouraging debate and sharing of perspectives.3. Laboratory Work: Hands-on experiments and practical activities in the laboratory to reinforce theoretical concepts and develop skills in microbial techniques and analysis.4. Case Studies: Analyzing real-life cases and scenarios to apply microbiological principles and problem-solving skills.
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5. Interactive Learning: Utilizing interactive technology, such as online quizzes and simulations, to enhance student participation and understanding.

Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	56	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب 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 #7, #10
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #8
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #9
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	Introduction to Microbiology: History, Scope, and Importance
Week 2	Microbial Diversity and Classification
Week 3	Microscopy and Staining Techniques
Week 4	Microbial Cell Structure and Function
Week 5	Microbial Metabolism and Energetics

Week 6	Microbial Growth and Reproduction
Week 7	Control of Microbial Growth: Physical Methods
Week 8	Control of Microbial Growth: Chemical Methods
Week 9	Microbial Genetics: DNA Structure and Replication
Week 10	Microbial Genetics: Gene Expression and Regulation
Week 11	Microbial Genetics: Mutation and Genetic Transfer
Week 12	Microbial Interactions: Mutualism and Commensalism
Week 13	Microbial Interactions: Pathogenesis and Host-Microbe Relationships
Week 14	Microbial Diseases: Bacterial Infections
Week 15	Microbial Diseases: Viral Infections
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction to Microscopy and Staining Techniques
Week 2	Lab 2: Culturing and Isolation of Microorganisms
Week 3	Lab 3: Microbial Cell Structure and Morphology
Week 4	Lab 4: Microbial Metabolic Pathways
Week 5	Lab 5: Microbial Growth and Reproduction
Week 6	Lab 6: Control of Microbial Growth: Physical Methods
Week 7	Lab 7: Control of Microbial Growth: Chemical Methods
Week 8	Lab 8: Microbial Genetics: DNA Extraction and PCR
Week 9	Lab 9: Microbial Genetics: Gene Expression and Regulation
Week 10	Lab 10: Microbial Genetics: Genetic Transfer Techniques
Week 11	Lab 11: Microbial Interactions: Culturing Symbiotic Microorganisms
Week 12	Lab 12: Microbial Interactions: Pathogenicity Testing
Week 13	Lab 13: Microbial Diseases: Bacterial Identification
Week 14	Lab 14: Microbial Diseases: Viral Identification
Week 15	Lab 15: Research Project - Independent research project on a specific aspect of microbiology, such as a case study or investigation.

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Tortora, G. J., Funke, B. R., & Case, C. L. (2019). Microbiology: An Introduction. Pearson.	Yes

Recommended Texts	Prescott, L. M., Harley, J. P., & Klein, D. A. (2017). Microbiology. McGraw-Hill Education.	No
Websites	https://www.asm.org/MicrobeLibrary	

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	Soil and aquatic microbiology		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Wat 308		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	Semester of Delivery	
Administering Department	Biology	College	Science
Module Leader	Name Dhuha Mahdi Jabir	e-mail	E-mail dhuha.mahdijabir @qu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	<p>Understanding microbial diversity in soil and aquatic environments.</p> <p>The study of soil microbiology seeks to elucidate the ecological processes that occur within soil ecosystems.</p> <p>Exploring soil health and fertility</p> <p>Investigation of modern methods in the treatment of various pollutants using microorganisms in soil and water</p>
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>It enhances our understanding of microbial communities, their roles in nutrient cycling, disease dynamics, and ecosystem functioning. It enables the development of sustainable agricultural practices, disease management strategies, and environmental conservation measures. Ultimately, it contributes to the promotion of healthier soils, water bodies, and ecosystems.</p>
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p>Soil and aquatic microbiology sciences are interdisciplinary fields that focus on the study of microorganisms and their interactions within soil and aquatic environments. These microbiological studies provide crucial insights into the complex microbial communities present in these ecosystems and their ecological functions. Here, we will explore the indicative content of both soil and aquatic microbiology sciences.</p> <p>In soil microbiology, researchers investigate the diverse microbial populations found in soil, including bacteria, fungi, archaea, and viruses. They explore the interactions between these microorganisms and the soil environment, such as nutrient cycling, organic matter decomposition, and the symbiotic relationships between microbes and plants. The indicative content of soil microbiology includes studying microbial diversity and community structure, examining the effects of land management practices on soil microbes, assessing the role of microorganisms in soil health and fertility, and exploring the potential applications of soil microbiota in agriculture and environmental remediation.</p> <p>Aquatic microbiology focuses on microorganisms inhabiting freshwater and marine environments, such as lakes, rivers, oceans, and estuaries. Researchers in this field investigate microbial processes that impact the aquatic ecosystem, including nutrient cycling, carbon fixation, and the degradation of organic matter. They study the diversity and dynamics of microbial communities in response to environmental factors like temperature, salinity, and pollution. Additionally, aquatic microbiologists examine the role of microorganisms in harmful algal blooms, waterborne diseases, and the purification of water resources.</p>

	<p>Both soil and aquatic microbiology sciences employ a range of analytical techniques and tools, including DNA sequencing, microscopy, culturing methods, and molecular biology techniques like PCR (Polymerase Chain Reaction). Researchers often conduct fieldwork to collect samples from different ecosystems, followed by laboratory analyses to characterize microbial communities and their functions.</p> <p>The knowledge gained from soil and aquatic microbiology sciences has significant implications for various fields, including agriculture, environmental science, biotechnology, and public health. It helps in developing sustainable agricultural practices, understanding ecosystem functioning, and managing environmental pollution. Moreover, insights from these sciences contribute to the development of novel microbial-based biotechnological applications, such as the production of biofuels, bioremediation strategies, and wastewater treatment technologies.</p> <p>In conclusion, soil and aquatic microbiology sciences provide crucial insights into the intricate microbial communities that exist within soil and aquatic ecosystems. By studying the indicative content of these fields, researchers gain a deeper understanding of microbial diversity, community dynamics, and their ecological functions. This knowledge plays a vital role in addressing various environmental challenges and developing sustainable solutions for the future.</p>
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.</p>

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

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	Introduction - Soil characteristics and suitability for microorganisms
Week 2	Major soil microbes
Week 3	The carbon cycle and its relationship to microorganisms
Week 4	Nitrogen cycle and its relationship to microorganisms
Week 5	Nitrification and nitrogen fixation
Week 6	Transformations of phosphorus and sulfur and the relationship of microorganisms with them
Week 7	Analysis of chemical pollutants and pesticides by soil microbiology
Week 8	Water is a microbial environment
Week 9	Marine, fresh and hot water bacteria
Week 10	Factors affecting microbial activity
Week 11	Sources of microbial contamination in water
Week 12	Treating drinking water and human waste
Week 13	sewage waste microbes

Week 14	Methods of treating sewage waste and the role of microbes in it
Week 15	Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Isolation and Enumeration of Soil Microorganism
Week 2	Lab 2: Isolation of Soil bacteria
Week 3	Lab 3: Isolation of spore-forming bacteria
Week 4	Lab 4: Isolation of bacteria producing antibiotics from soil
Week 5	Lab 5: Isolation of Molds and Yeasts
Week 6	Lab 6: Isolation of molds producing antibiotics
Week 7	Lab 7: Isolation and Enumeration of water Microorganism
Week 8	Detection of fecal- pollution
Week 9	Membrane Filter Technique
Week 10	Isolation and enumeration of Fecal streptococci
Week 11	Isolation of <i>Clostridium perfringens</i> from water
Week 12	Isolation and identification of <i>Salmonella</i> & <i>Shigella</i>
Week 13	Isolation of Vibrio's from water
Week 14	Bacteriological tests of recreational water
Week 15	Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Principle of microbiology	Yes
Recommended Texts	1. Microbial Ecology: Fundamentals and Applications (4th Edition) 4th Edition	No
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

النباتات الطبية – ثالث علوم الحياة

Module Information			
معلومات المادة الدراسية			
Module Title	Medicinal plants		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Med 306		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Layth Sareea Mutar	e-mail	Layth,sareea@qu.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	<ol style="list-style-type: none"> 1. To develop skills and understanding of basic Extraction and Fractionation Procedures for Experimental Purposes theory through the application of techniques. 2. To understand Methods and dates for collecting medicinal plants. 3. This course deals with the basic concept of Medicinal Plant . 4. This is the basic subject for Methods of extracting active compounds. 5. To understand Methods and dates for collecting medicinal plants. 6. To perform Storage of medicinal plants.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Skills of preparing plant extracts 2. Identify poisonous plants 3. Classification of medicinal plants 4. Challenges of marketing medicinal plants
Indicative Contents المحتويات الإرشادية	<ol style="list-style-type: none"> 1- Correct handling of chemical solvents 2- Correct handling of plant extracts and methods of preservation to avoid degradation

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Encourage students' participation in different experiments
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Student Workload (SWL)

الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

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	1- Historical Introduction and Importance of Medicinal Plant
Week 2	2- Classification of Medicinal Plants
Week 3	3- Factors affecting on growth and production of medicinal plants
Week 4	4- Development of Herbal drug and its challenges
Week 5	5- Chemical Constituents of Plants Used as Herbal Medicines
Week 6	6- Alkalioids
Week 7	7- Terpenoids : Volatile oils
Week 8	8- Terpenoids : Glycosides
Week 9	9- Terpenoids : Saponins & Resins
Week 10	10- Phenols : Tannins
Week 11	11- Phenols : Flavenoids
Week 12	12- Phenols : Coumarins
Week 13	14-Example of medicinal plants
Week 14	13- Biotechnological Applications to Medicinal Plants
Week 15	15- Poisonous plants
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Basic Extraction and Fractionation Procedures for Experimental Purposes
Week 2	Lab 2: Methods of extracting
Week 3	Lab 3: Alkalioids Extraction
Week 4	Lab 4: Terpenoids Extraction
Week 5	Lab 5: Phenols Extraction
Week 6	Lab 6: Methods and dates for collecting medicinal plants
Week 7	Lab 7: Storage of medicinal plants

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Plant Physiology, 3rd ed by Lincoln Taiz and Eduardo Zeiger- 2005	No
Recommended Texts	Plant Biology A.J. Lack & D.E. Evans - This edition published in the Taylor & Francis e-Library, 2005..	No
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	Food microbiology		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Foo 405		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	4	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr. Firas Sarhan Abed	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	To provide essential scientific background in the field of food microbiology and food safety.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.</p> <ol style="list-style-type: none">1. Explain the interactions between microorganisms and the food environment, and factors influencing their growth and survival2. Explain the significance and activities of microorganisms in food.3. Describe the characteristics of foodborne, waterborne and spoilage microorganisms, and methods for their isolation, detection and identification.4. Explain why microbiological quality control programmes are necessary in food production.5. Explain the effects of fermentation in food production and how it influences the microbiological quality and status of the food product.6. Discuss the microbiology of different types of food commodities.7. Discuss the rationale for the use of standard methods and procedures for the microbiological analysis of food.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <ol style="list-style-type: none">1. The factors affecting the growth of microbes in food.2. The microbes of relevance to foods.3. The microbiology of raw and processed foods.4. The fermentation process.5. The principles of cleaning and sanitation.6. The factors leading to outbreaks of food borne illness.7. Strategies to minimise risk of food borne illness.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Lectures supported by practicals to develop the material covered in the lectures. About half the time will be spent on theoretical work and half on practicals. Laboratory work is particularly important, since, in addition to practical instruction, there is ample opportunity for in-depth discussion with students on aspects of particular interest. To facilitate this, a substantial number of staff will attend each practical session.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	5% (2)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	5% (2)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	5% (2)	Continuous	All
	Report	1	5% (2)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	40 % (40)	8	LO #1 - #7
	Final Exam	3hr	60% (60)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Important microorganisms in food
Week 2	Sources of food contamination with microorganisms
Week 3	General principles of food preservation and factors affecting it
Week 4	Food preservation methods and factors affecting them
Week 5	Food preservation methods - temperatures and drying
Week 6	Food preservation methods -Radiation, freezing and preservatives
Week 7	Microorganisms in milk and its products
Week 8	Microorganisms in meat and its products
Week 9	Microorganisms in grain and its products

Week 10	Microorganisms in fruits, vegetables and their products
Week 11	Food poisoning and food infection
Week 12	Bacterial toxins and Mycotoxins
Week 13 Week 14	Standard specifications for microbial limits in foods
Week 15	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Spoilage food .
Week 2	Lab 2: Types of food samples .
Week 3	Lab 3: Preparation & dilution of food homogenate.
Week 4	Lab 4: Pour plating method.
Week 5	Lab 5: Standard plate count .
Week 6	Lab 6: Microbial damage in eggs .
Week 7	Lab 7: Estimate the microbial number in eggs.
Week 8	Lab 8: Microorganisms in milk .
Week 9	Lab 9: Dye Reduction tests .
Week 10	Lab 10: Turbidity test .
Week 11	Lab 11: Methylene blue reduction test .
Week 12	Lab 12: Principles of Food Preservation .
Week 13	Lab 13: Thermal processing.
Week 14	Lab 14: Methods of freezing .
Week 15	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Foodborne Pathogens A.H. Varnam & M.G. Evans (1996, Manson Publishing)	No
Recommended Texts	Food Microbiology M.R. Adams & M.O. Moss (2000, Royal Society of Chemistry, UK)	No
Websites	http://www.fda.gov/Food/ScienceResearch/ResearchAreas/SafePracticesforFoodProcesses/default.htm	

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	Taxonomy plant		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Plt 210		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Biology	College	Type College Code
Module Leader	Name: Intedhar Abbas Marhoon	e-mail	E-mail: intedhar.abbas@qu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	<ol style="list-style-type: none">1. The study of plant seeks to clarify the differences in the composition of plant parts that occur as a result of the different plant environment2. This course deals with all types of plant tissues in each part of the plant3. Students learned to prepare anatomical sections from plant parts4. Developing skills in distinguishing between plants through the use of a microscope.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.</p> <ol style="list-style-type: none">1. Recognizing the concept of taxonomy and its relationship to other sciences2. Identify the divisions of plant (root, stem, leaf, flower)3. Develop a list of different terms related to taxonomy.4. Description of plant in terms of root, stem, leaf, flower shape and location.5. Identify the function of each part in the plant.6. Discuss the differences in plant parts between plants of different environments.7. Learn to draw organ I sections of plant tissues.8. Discuss the relationship between plant taxonomy and other sciences.9. Learn about the use of a microscope in examining anatomical sections of plant.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p>Plant taxonomy is one of the sciences specialized in studying plant parts and determining the differences in the depending on the nature of the environmental conditions in which the plant lives. It also studies its relationship to other sciences, such as ecology, cellular science, plant anatomy, and others.</p> <p>In plant classification, scientists classify the plant parts as the root, stem, leaf, and flower, and explain the mutations present in each part. The classification was based on different morphological, origin and physiological function.</p> <p>Taxonomy explains the most important known taxonomic systems: the artificial system, the evolutionary system, the natural system, and the modern system. The indicative content of taxonomy includes the study of plant parts and their morphology as well as the study of the differences between the root, stem, leaves, flower, seed and fruit. And study the effects of the environment on the mutations of organelles</p> <p>Study of the changes in flowers and the study of the floral equation, changes and shapes of the calyx, corolla, anthers and pistil</p>

	As well as leaf modifications and differences on the basis of the shape of the blade, edge, top and base, also the veining and the nature of the leaf is simple or compound
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities 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	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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	Introduction – define taxonomy
Week 2	The relationship of taxonomy with other sciences
Week 3	taxonomy systematic
Week 4	PLANT ORGANS :: Root(Modification of root)
Week 5	Stem, Modified , type of stem
Week 6	The leaf (Modification of leaf base, stipules, petiole, lamina)
Week 7	venation
Week 8	phyllotaxy
Week 9	Modification of simple and compound leaves
Week 10	Parts of flower (bract, calyx, corolla)
Week 11	Androecium(length filaments, cohesion and adhesion of stamens)
Week 12	Gynoecium (number of carpels, ovary, style, stigma)
Week 13	Symmetry of flower
Week 14	Floral formula
Week 15	the fruit and seed
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Method of collecting and drying plant samples
Week 2	Lab 2: root
Week 3	Lab 3: tap root
Week 4	Lab 4: adventitious root
Week 5	Lab 5: stem
Week 6	Lab 6: leaf (modified leaf, shape lamina, margins and apices of lamina)
Week 7	Lab 7: simple and compound leaves
Week 8	venation
Week 9	Stomata

Week 10	The flower(changes the calyx and the corolla)
Week 11	forms of pollen
Week 12	Stamens (modifications of filaments and anthers(
Week 13	pistil
Week 14	Classification of fruits (dry, soft, clustered, false fruits)
Week 15	seed shapes
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	. Flowering plants تأليف Armen Takhtajan ، 2339 م . . Plant systematic تأليف Curcharan singh ، 2334 م .	
Recommended Texts	. Vascular plant systematic ، تأليف Radford م 1974 وجماعته .	
Websites	http://www.mediafire.com/.../e7141ygv.../Plant+rar	

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	Taxonomy plant		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Plt 210		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Biology	College	Type College Code
Module Leader	Name: Intedhar Abbas Marhoon	e-mail	E-mail: intedhar.abbas@qu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	<ol style="list-style-type: none">1. The study of plant seeks to clarify the differences in the composition of plant parts that occur as a result of the different plant environment2. This course deals with all types of plant tissues in each part of the plant3. Students learned to prepare anatomical sections from plant parts4. Developing skills in distinguishing between plants through the use of a microscope.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.</p> <ol style="list-style-type: none">1. Recognizing the concept of taxonomy and its relationship to other sciences2. Identify the divisions of plant (root, stem, leaf, flower)3. Develop a list of different terms related to taxonomy.4. Description of plant in terms of root, stem, leaf, flower shape and location.5. Identify the function of each part in the plant.6. Discuss the differences in plant parts between plants of different environments.7. Learn to draw organ I sections of plant tissues.8. Discuss the relationship between plant taxonomy and other sciences.9. Learn about the use of a microscope in examining anatomical sections of plant.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p>Plant taxonomy is one of the sciences specialized in studying plant parts and determining the differences in the depending on the nature of the environmental conditions in which the plant lives. It also studies its relationship to other sciences, such as ecology, cellular science, plant anatomy, and others.</p> <p>In plant classification, scientists classify the plant parts as the root, stem, leaf, and flower, and explain the mutations present in each part. The classification was based on different morphological, origin and physiological function.</p> <p>Taxonomy explains the most important known taxonomic systems: the artificial system, the evolutionary system, the natural system, and the modern system. The indicative content of taxonomy includes the study of plant parts and their morphology as well as the study of the differences between the root, stem, leaves, flower, seed and fruit. And study the effects of the environment on the mutations of organelles</p> <p>Study of the changes in flowers and the study of the floral equation, changes and shapes of the calyx, corolla, anthers and pistil</p>

	As well as leaf modifications and differences on the basis of the shape of the blade, edge, top and base, also the veining and the nature of the leaf is simple or compound
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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities 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	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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	Introduction – define taxonomy
Week 2	The relationship of taxonomy with other sciences
Week 3	taxonomy systematic
Week 4	PLANT ORGANS :: Root(Modification of root)
Week 5	Stem, Modified , type of stem
Week 6	The leaf (Modification of leaf base, stipules, petiole, lamina)
Week 7	venation
Week 8	phyllotaxy
Week 9	Modification of simple and compound leaves
Week 10	Parts of flower (bract, calyx, corolla)
Week 11	Androecium(length filaments, cohesion and adhesion of stamens)
Week 12	Gynoecium (number of carpels, ovary, style, stigma)
Week 13	Symmetry of flower
Week 14	Floral formula
Week 15	the fruit and seed
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Method of collecting and drying plant samples
Week 2	Lab 2: root
Week 3	Lab 3: tap root
Week 4	Lab 4: adventitious root
Week 5	Lab 5: stem
Week 6	Lab 6: leaf (modified leaf, shape lamina, margins and apices of lamina)
Week 7	Lab 7: simple and compound leaves
Week 8	venation
Week 9	Stomata

Week 10	The flower(changes the calyx and the corolla)
Week 11	forms of pollen
Week 12	Stamens (modifications of filaments and anthers(
Week 13	pistil
Week 14	Classification of fruits (dry, soft, clustered, false fruits)
Week 15	seed shapes
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	. Flowering plants تأليف Armen Takhtajan ، 2339 م . . Plant systematic تأليف Curcharan singh ، 2334 م .	
Recommended Texts	. Vascular plant systematic ، تأليف Radford م 1974 وجماعته .	
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Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
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	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
<p>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.</p>				

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	BioChemistry		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Bio 205		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name: Prof.Dr.Muqdad.I.Kadhim	e-mail	E-mail: Muqdad.Kadhim@qu.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. 1.To develop problem solving skills and understanding of Biochemical reactions through the application of mechanism of reaction such as their effect on human body . 2. 2.To understand carbocation carbanion and Free radical from a given reaction . 3. 3.This course deals with the basic concept of organic reactions. 4. 4.This is the basic subject for all organic and inorganic reactions. 5. 5.To understand Markovnikov's Rule and AntiMarkovnikov rules. 6. 6.To perform Quantitative and Qualitative Organic analysis.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<p>Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.</p> <ol style="list-style-type: none"> 1. Recognize how organic reaction works in peroxide and gaseous media . 2. List the various terms associated with organic reactions. 3. Summarize what is meant by a Free radical . 4. Discuss the reaction and involvement of atoms in organic reactions . 5. Describe melting point , boiling point, sublimation . 6. Define Saytzeff Rule . 7. Identify the Organic reaction of Alkane and their applications. 8. Discuss the operations of fermentation in alcohols . 9. Discuss the various physical properties of alkane , alkene , and alkyne. 10. Explain the Markovnikov Rule and Saytzeff Rule laws used in Organic reaction . 1. 11. Identify the Tautomerism and effect relationship with respect to acid and base.
<p>Indicative Contents المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <p>Part A - Atomic Theory Molecular Orbitals – Electron and Quantum numbers definitions, anions and cations and Free radical, Combining resistive reactions in different rule and law , Introduction to organic synthesis and analysis. [15 hrs] Structure of Organic Molecules Nomenclature of Organic Compound Alkanes Cycloalkanes Alkenes Dienes Alkynes and Alkyl Halides . [15 hrs]</p> <p>Alcohols Poly hydric alcohols Ethers and Epoxides . [10 hrs]</p> <p>Ethers and Epoxides Thiols and Thioethers Organic Reaction Mechanisms Isomerism and Stereochemistry . [15 hrs] Revision problem classes [6 hrs]</p> <p>Part B - Analogue Electronics</p>

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Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities 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	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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	Introduction , Biochemical methods
Week 2	General Aspect on the chemistry of the cell , Molecular Genetics
Week 3	Proteins , Chemistry of amino acids and Peptides
Week 4	Structural Organisation
Week 5	Function of Proteins
Week 6	Carbohydrate , Classification , Reaction
Week 7	Lipids , Classification , Reaction
Week 8	Vitamins , Classification
Week 9	Nucleic Acids , Bases , Nucleosides and Nucleotide of nucleic acids
Week 10	Structural Organisation of DNA , RNA
Week 11	Role of Nucleic acids in protein Synthesis
Week 12	Enzymes , Structure and Functions
Week 13	Kinetic of Enzyme , Coenzymes
Week 14	Bioenergetics , Production and Transfer of chemical energy
Week 15	Compound of high energy , coupled reactions and Biological Oxidation

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Identification and classification of carbohydrate
Week 2	Lab 2: Colorimetric determination of carbohydrates
Week 3	Lab 3: Optical properties of carbohydrates
Week 4	Lab 4: Structural elucidation for carbohydrates
Week 5	Lab 5: carbohydrates Periodate oxidation
Week 6	Lab 6: carbohydrates methylation
Week 7	Lab 7: carbohydrates acetylation

Week 8	Lab 8: carbohydrates reduction , hydrolysis
Week 9	Lab 9: Isolation and chromatographic separation of carbohydrate (Lactose /Milk)
Week 10	Lab 10: Starch /Patato , Glycogen /Liver
Week 11	Lab 11: galactose /brain , Fructose /Grape
Week 12	Lab 12: Identification and classification of proteins
Week 13	Lab 13: physical and chemical properties of lipids
Week 14	Lab 14: Sequence determination (N and C) terminals identification
Week 15	Lab 15: effect of PH , Ttration , Hydrolysis and heavy metals on proteins

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1- Principles of Biochemistry by Lehninger 2002 1- Biochemistry by By Stryer 2002 3- Principles of Biochemistry by LIPPENCOTT 2002 4- Principles of Biochemistry by Mathews 2020 5- Biochemical calucalation by segal 1976	Yes
Recommended Texts	Biochemistry by Delvin 2020	Yes
Websites	https://download-scientific-pdf-ebooks.com/993-1-library-books	

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 (فيد 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	Entomology		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Ent 201		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name Hanaa Rahman Lefta	e-mail	E-mail hanaa.rahman@qu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	Principle of entomology serves as ideal text for courses in general entomology with laboratory sections written for student who have completed an introductory course in biology , it provides an in- depth treatment of insect anatomy covered , morphology and physiology .
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	It enhance our understanding of the common insects are discussed as
Indicative Contents المحتويات الإرشادية	<p><u>Entomology</u> should be balanced treatment of the subject stil hold and is reflected in the retention of the format of earlier edition its arrangement evaluation and anatomy and physiology reproduction and development , evaluation and diversity has again undergone great reworking mainly because the last decade has seen the uncovering of significant new fossil evidence and the application of molecular and cladistic analysis to extant group and as result idea both on the relationships of insects to other orthopodes tow purpose it provide a description of external stricture which remain the principle basis on which insects can be classified and identified , while stressing diversity with reference to mouth parts and appendages modification anatomy and physiology deal with homeostatic system that keep insect in tune.</p>
	Anatomy is preparation would not have been possible but for my coolleges too numerous to mention who provided information and answerd specific question that improved the books content and currency , anatomy deal with all insects body and appendages , with their environment enabling them to develop and reproductive optimally , and dissection integument its influence on success of insects , examine sensory whose form and function are greatly influence of cuticulare nature , also include muscle structure and function and all eternal system , reproduction and empryonic development

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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	Introduction – of entomology
Week 2	Insect definition
Week 3	Position of insect classification from animal science
Week 4	Importance of insect and their dispersal
Week 5	The external view of insects
Week 6	Internal anatomy
Week 7	The digestive system

Week 8	The excretion system
Week 9	The respirator system
Week 10	Circulatory system
Week 11	Reproductive system
Week 12	Nerves system
Week 13	Sensory organs
Week 14	Empro process
Week 15	reproduction
Week 16	Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction of entomology
Week 2	Lab 2 : method of collection and killing insects
Week 3	Lab 3: insect body region
Week 4	Lab 4: head appendages . , antenna , mouth parts
Week 5	Lab 5: thorax appendages , wing , leg
Week 6	Lab 6: external anatomy of the abdomen and its function
Week 7	Lab 7: internal anatomy
Week 8	Lab 8:exdigestive system
Week 9	Lab 9: excretion system
Week 10	Lab 10: respiratory system
Week 11	Lab 11: circulatory system
Week 12	Lab 12:reproductive system
Week13	Lab 13:insect development
Week 14	Lab 14: insects life cycle
Week 15	Exam

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Entomology	Yes

Recommended Texts	Principle of general entomology	No
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	parasitology		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Par 211		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Dr. Ali Bustan Mohsein	e-mail	Ali.alwaaly@qu.edu.iq
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	07/06/2023	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	The aim of the course is to develop basic knowledge and skill to identify the parasites, the diseases caused by them and emphasize on the laboratory diagnosis tool for detection of different stages of parasites.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> 1. Define and classify the medically important parasites based on morphology, biology and clinical criteria . 2. Describe the life cycle, morphology, infective stage stages, diagnosis stage, sources of infection and mode of transmission of each parasite with a view of prevention and control of parasitic diseases. 3. Identify the parasites at different stages of life cycle, their vectors and hosts by microscopic examination. 4. Identify the deferent larval stages of the parasites during life cycle and pathogenesis steps. 5. Apply suitable methods for parasites detection. 6. Use applicable tools for parasitic disease control and prevention. 7. Combine between vectors and parasitic disease to make a good control plan.
Indicative Contents المحتويات الإرشادية	Each module is assessed by written examinations and coursework (practical reports, field course reports, essays, problem sheets, exercises and tests).

Learning and Teaching Strategies استراتيجيات التعلم والتعليم			
Strategies	We use a mixture of teaching styles - lectures, tutorials, classroom activities and laboratory work.		
Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1and #2
	Assignments	2	10% (10)	2 and 12	LO #3and #4
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5 and #6
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 and #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
Week	Material Covered
Week 1	Introduction of parasitology
Week 2	Protozoa- sarcodina, Entamoeba histolytica , Nonpathogenic amoeba
Week 3	Protozoa – sarcodina, Free living pathogenic amoebae Protozoa- Ciliates, Blantidium coli
Week 4	Protozoa- Flagellates, Giardia lamblia, Trichomonas (urogenital flagellate)
Week 5	Protozoa- Kinetoplastida, Leishmaniasis , Trypanosomes
Week 6	Protozoa- Sporozoa, Toxoplasma gondii , Cryptosporidium sp.
Week 7	Protozoa- Sporozoa, Plasmodium (Malaria.)
Week 8	Platyhelminthes- Cestodes ,T. sagenata and T. solium ,Hymenolepis nana H. diminuta
Week 9	Platyhelminthes- Cestodes, Echinococcus granulosus and E. multilocularis , Diphyllbothrium latum
Week 10	Platyhelminthes- Trematodes , Liver and Lung Flukes
Week 11	Platyhelminthes- Trematodes, Blood Flukes (shistosoma)
Week 12	Nematoda- Entrobis vermicularis , Ascaris lambricoid lumbricoides , Strongyloides stercorali
Week 13	Nematoda- Hook worm and Whipworm

Week 14	Nematoda- Filaria and filariasis
Week 15	Medically important arthropodes Arthropoda- Insects, medical important vectors

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week	Material Covered
Week 1	Lab 1: Introduction to use of microscopes
Week 2	Lab 2: Handling of laboratory samples for diagnosis Collection and transport of specimens for * enteric pathogens
Week 3	Lab 3: Stool diagnosis a) Macroscopic examination of stool b) Microscopic examination of wet mounts
Week 4	Lab 4: pigmentation Preparation of preservatives and fixatives for mounted slides * Formalin solution (5-7%) * PVA (Polyvinyle alcohol) as fixative * Schaudinns fixativ
Week 5	Lab 5: Common diagnosis of parasites Laboratory diagnosis of enteric protozoa * The routine methods used in laboratory diagnosis Concentrated methods of diagnosis Concentration methods; types, purpose to use concentration methodes
Week 6	Lab 6: Differentiation of pathogenic Entamoeba histolytica and the morphologically identical non pathogenic Entamoeba dispar
Week 7	Lab 7: free living firsts -Naegleria fowleri & Acanthamoeba spp Morphology, habitat, mode of infection, infective stage, life cycle and laboratory diagnosis
Week 8	Lab 8: flagellate Tissue flagellates e.g Genus Trypanosoma & Genus Leishmania Laboratory diagnosis; routine methods, immunological Assays and molecular assays
Week 9	Lab 9: Intestinal coccidian Intestinal coccidian e.g Cryptosporidium parvum Morphology, habitat, mode of infection, infective stage, lifecycle and laboratory diagnosis with special emphasis on Ziehl-Neelsen technique

Week 10	Lab 10: Toxoplasmosis Extra-intestinal coccidian e.g. Toxoplasma gondii Brief lecture on morphology, habitat, modes of infection, infective stages, life cycle
Week 11	Lab 11: Genus Plasmodium Genus Plasmodium; Terms used in malaria & Life cycle
Week 12	Lab 12: Bovine and pig worms Genus Taenia including Taenia saginata & T. solium Morphology, habitat, mode of infection, infective stage, life cycle and laboratory diagnosis; differentiate between both species in laboratory.
Week 13	Lab 13: Echinococcus granulosus Short notes on the parasite with special emphasis on the methods of diagnosis (detection of certain Ag)
Week 14	Lab 14: Trematodes liver worms Genus : Fasciola hepatica , Fasciola gigantica
Week 15	Lab 15: Genus Schistosoma in general with emphasis on the species endemic in Iraq Schistosoma haematobium the use of special technique in the examination of urine sample (filtration by Schisto-kit) as direct method and immunoblot as indirect method

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Name of the Textbook: Parasitology for medical and clinical laboratory professionals Authors: John W. Ridley Publisher: Delmar Cengage learn ISBN: 978-1-4354-4816-2 Year: 2012	No
Recommended Texts	Medical Parasitology Authors: Arora and Arora Edition: Third ISBN: 978-81-239-1850-1 Year: 2011	No
Websites	https://www.cdc.gov/parasites/index.html	

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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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Anatomy plant		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Pla 204		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader	Name: Intedhar Abbas Marhoon	e-mail	E-mail: intedhar.abbas@qu.edu.iq
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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	<ol style="list-style-type: none">1. The study of plant anatomy seeks to clarify the differences in the composition of plant tissues that occur as a result of the different plant environment2. This course deals with all types of plant tissues in each part of the plant3. Students learned to prepare anatomical sections from plant parts4. Developing skills in distinguishing between plant tissues through the use of a microscope.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<p>Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks.</p> <ol style="list-style-type: none">1. Recognizing the concept of plant anatomy and its relationship to other sciences2. Identify the divisions of plant tissues3. Develop a list of different terms related to plant anatomy.4. Description of plant tissues in terms of cell shape and location.5. Identify the function of each tissue in the plant.6. Discuss the differences in plant tissues of plant parts between plants of different environments.7. Learn to draw anatomical sections of plant tissues.8. Discuss the relationship between plant anatomy and other sciences.9. Learn about the use of a microscope in examining anatomical sections of plant tissues.10. Learn how to prepare anatomical sections from plant parts.
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p>Plant anatomy is one of the sciences specialized in studying plant tissues and determining the differences in the nature of the tissue depending on the nature of the environmental conditions in which the plant lives. It also studies its relationship to other sciences, such as ecology, cellular science, plant taxonomy, and others.</p> <p>In plant anatomy, scientists classify tissues into two main divisions: meristematic tissues and permanent tissues. The classification was based on the basis of origin, location within the plant, and physiological function.</p> <p>Explains the basic theories that show the origin of the developing meristematic peaks The indicative content of plant anatomy includes the study of the types of tissues, their function, and their location in the plant, as well as the study of the differences between the tissues of plant parts such as the root, stem, leaf, flower, seed, and fruit. And study the effects of the environment on the tissues</p>

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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
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Week 1	Introduction – define anatomy
Week 2	The relationship of plant anatomy with other sciences
Week 3	Meristematic tissues
Week 4	Several theories have been to explain the mode of growth found in shoot apical meristem
Week 5	Permanent tissues
Week 6	Dermal tissue system
Week 7	Ground tissue) Collenchyma tissue . Sclerenchyma(
Week 8	Vascular tissue system
Week 9	Xylem
Week 10	Phloem
Week 11	Vascular bundles
Week 12	Plant secretory tissue
Week 13	PLANT ORGANS :: Root
Week 14	stem
Week 15	Leaf
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Plant cell
Week 2	Lab 2: Pits
Week 3	Lab 3: Intercellular space
Week 4	Lab 4: Living Components of Pant Cell
Week 5	Lab 5: Non-protoplasmic components (non-living)
Week 6	Lab 6: Tissues Plant
Week 7	Lab 7: Maristematic Tissues
Week 8	Permanent tissue
Week 9	Stomata
Week 10	Epidermal hairs (Trichomes)
Week 11	Parenchyma tissue
Week 12	Collenchyma tissue
Week 13	Sclerenchyma tissue

Week 14	Vascular Tissue system
Week 15	Xylem and Phloem
Week 16	Preparatory week before the final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Anatomy of Flowering Plant Esau's Plant Anatomy	Yes
Recommended Texts	Plant Anatomy An Applied Approach	No
Websites	http://www.mediafire.com/.../e7l4l1ygv.../Plant+Anatomy.rar	

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	Invertebrates 2		Module Delivery
Module Type	Complementary		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Inv 209		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Biology	College	Science
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none">1. The course will cover Invertebrates, which is the science that studies the animals without backbone.2. Introduce students to the difference between invertebrates and vertebrates.3. Study the link between vertebrates and invertebrates.4. describe invertebrates as organisms that do not have a vertebral column,5. describe the characteristics of organisms belonging to the following phyla: Protozoa, Porifera, Cnidaria , Platyhelminthes and Nematoda, Annelida, Arthropoda, Mollusca, , and Echinodermata,6. classify organisms into phyla based on given descriptions.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none">1. After completing the student's university studies.2. Reviews basic scientific concepts and knowledge in invertebrate science.3. Explain the taxonomic, morphological and biosynthetic characteristics of invertebrate animals4. Examination of understanding and familiarity with the science of invertebrates.5. Shows the relationship between the structural infrastructure of an invertebrate animal and the characteristics of the surroundings it inhabits.6. Explain the relationships between invertebrate animals and their environment, and explain the outcome of these relationships.7. Analyze the changes in the environment related to invertebrate animals based on a sound scientific background.8. Know the morphological and taxonomic characteristics of invertebrates in the laboratory9. records with the classification of invertebrate animals from their different environments in the mid-ocean information and experience it.10. Employ the scientific and laboratory skills and knowledge he acquired during his study of this science in interaction surrounding objects.11. Raising awareness in his community about invertebrate animals and their impact on the environment and the creatures around them.

	12. The available recent technologies that establish and develop the concepts of this science
Indicative Contents المحتويات الإرشادية	<p>Indicative content includes the following.</p> <p>Planned timetable This information is given as indicative. Timetable may change at short notice depending on room availability.</p> <p>Module coordinator Dr M Gstic</p> <p>This information is given as indicative. Staff involved in a module may change at short notice depending on availability and circumstances.</p> <p>Module Staff This information is given as indicative. Staff involved in a module may change at short notice depending on availability and circumstances.</p>

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	<p>Learn more about invertebrates with our teaching wiki page below! We'll take a look at what they are and some of the examples of invertebrates! Animals that do not have a vertebral column (also known as a backbone or spine) are known as invertebrates. They come in all shapes and sizes, some invertebrates are microscopic, other invertebrates, like the giant squid, can definitely be seen with the naked eye</p>

Student Workload (SWL) الحمل الدراسي للطلاب محسوب ل ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطلاب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطلاب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطلاب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطلاب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطلاب خلال الفصل	125		

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	Phylum: Annelida, Characteristics of Phylum Annelida, Classification, Example: Nereis
Week 2	Example: Lumbricus (Earth worm), Example: Hirudo medicinalis
Week 3	Phylum Arthropoda, Characteristics of Phylum Arthropoda,
Week 4	Classification of Arthropoda, -Sub phylum :Onychophora (Example :Peripatus)
Week 5	Characteristic features of Onychophora,
Week 6	Subphylum Mandibulata A- Class: Crustacea, Example Astacus (Crayfish
Week 7	Class: Insecta (Hexapoda), C- Class: Chilopoda(Centipeds)
Week 8	Class: Diplopoda(Millipedes), Example : Julus
Week 9	Class: Pauropoda, Class: Symphyla
Week 10	-Sub phylum Chelicerata, A- Class: Merostomata, B- Class: Arachnida
Week 11	Class: Tardigrada, - Class: Pentastomida, The Importance of Arthropoda
Week 12	Phylum: Mollusca, Characteristics of Phylum Mollusca,
Week 13	Classification of Mollusca, Class: Monoplacophora, - Class: Polyplacophora, - Class: Aplacophora
Week 14	- Class: Gastropoda, Class: Scaphopoda, Torsion in Gastropoda, Ex: Dentalium , Class: Lamellibranchiata (Pelecypoda)
Week 15	Class: Cephalopoda, Order :Dibranchiata, Octopus, Sepia, Nautilus
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Phylum: Annelida
Week 1	Phylum: Annelida, Characteristics, Classification
Week 2	Class : Polychaeta, Order : Errantia Aphrodite , Perinereis
Week 3	Class: Oligochaeta, Class: Hirudinea, Order: Gnathobdellida
Week 4	Phylum : Arthropoda, Characteristics, Classification, 1- Subphylum: Onychophora
Week 5	Subphylum: Mandibulata A- Class: Crustacea, Subclass: Branchiopoda, Subclass: Copepoda
Week 6	Subclass: Malacostraca, 2- Subphylum: Mandibulata, 3- Subphylum: Chelicerata
Week 7	Phylum : Mollusca, Characteristics, Classification, Class :Gastropoda

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	An introduction to The Invertebrates	NO
Recommended Texts	Biology	No
	Invertebrates (Jacobe E.Safra&Jorge Aguila)	
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	Fungi taxonomy		Module Delivery
Module Type	core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	Fun 309		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	3	Semester of Delivery	
Administering Department	Biology	College	SCI
Module Leader	Name	e-mail	E-mail
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	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

<p>Module Objectives أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> 1. Understand the fundamental principles of Fungi taxonomy. 2. Explore the classification systems and nomenclature used in Fungi taxonomy. 3. Study the morphological and physiological characteristics of different fungal groups. 4. Develop skills in the identification and classification of fungi based on key features. 5. Gain knowledge of the ecological roles and economic importance of fungi.
<p>Module Learning Outcomes مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> 1. Demonstrate knowledge of the major fungal taxonomic groups and their distinguishing characteristics. 2. Apply taxonomic principles to identify and classify fungi based on morphological and genetic features. 3. Analyze and interpret fungal taxonomic literature and databases for accurate identification. 4. Utilize appropriate techniques for specimen collection, preservation, and preparation for taxonomic studies. 5. Understand the ecological roles and significance of fungi in various ecosystems.
<p>Indicative Contents المحتويات الإرشادية</p>	<ol style="list-style-type: none"> 1. Read textbooks, scientific papers, and reference materials on Fungi taxonomy. 2. Attend lectures and take notes, actively participating in class discussions. 3. Engage in hands-on laboratory sessions to practice fungal identification techniques. 4. Join mycological societies or clubs to interact with fellow enthusiasts and experts. 5. Conduct field surveys or participate in field trips to collect and study diverse fungal specimens.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

<p>Strategies</p>	<ol style="list-style-type: none"> 1. Lecture-based Learning: Attend lectures by experienced faculty members, focusing on fungal taxonomy principles, classification systems, and key features. 2. Hands-on Laboratory Sessions: Engage in practical sessions to examine and identify fungal specimens using microscopy and other identification techniques. 3. Field Studies and Collection: Conduct field studies to observe fungi in their natural habitats, collecting specimens for further examination and identification. 4. Collaborative Learning: Work in groups or participate in discussion forums to share knowledge, discuss taxonomic challenges, and learn from peers. 5. Research Projects: Undertake research projects to investigate specific aspects of Fungi taxonomy, such as the taxonomy of particular genera or the discovery of new species.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	94	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	31	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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 #7, #10
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #8
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #9
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	Introduction to Fungi Taxonomy and Classification Systems
Week 2	Fungal Morphology: Structures and Terminology
Week 3	Fungal Reproduction: Spores, Conidia, and Other Structures
Week 4	Fungal Life Cycles and Sexual Reproduction
Week 5	Classification of Fungi: Major Taxonomic Groups (Ascomycota, Basidiomycota, Zygomycota, etc.)
Week 6	Key Features for Fungal Identification: Macroscopic and Microscopic Characteristics
Week 7	Fungal Nomenclature and Classification Codes

Week 8	Fungal Ecology: Roles and Interactions in Ecosystems
Week 9	Pathogenic Fungi: Taxonomy and Medical Importance
Week 10	Mutualistic Fungi: Mycorrhizae and Lichens
Week 11	Economic Importance of Fungi: Food, Medicine, and Industry
Week 12	Fungal Biodiversity: Species Richness and Distribution
Week 13	Fungal Conservation and Preservation Efforts
Week 14	Molecular Techniques in Fungal Taxonomy
Week 15	Emerging Trends and Advances in Fungi Taxonomy
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Microscopy Techniques for Fungal Examination
Week 2	Lab 2: Identification of Macroscopic Fungal Features
Week 3	Lab 3: Microscopic Examination of Fungal Structures
Week 4	Lab 4: Fungal Isolation and Culturing Techniques
Week 5	Lab 5: DNA Extraction and PCR for Fungal Identification
Week 6	Lab 6: Fungal Specimen Collection and Preservation
Week 7	Lab 7: Identification of Ascomycetes
Week 8	Lab 8: Identification of Ascomycetes (Cup Fungi, Sac Fungi)
Week 9	Lab 9: Identification of Basidiomycetes (Mushrooms, Bracket Fungi)
Week 10	Lab 10: Identification of Zygomycetes (Bread Molds, Pin Molds)
Week 11	Lab 11: Identification of Deuteromycetes (Imperfect Fungi)
Week 12	Lab 12: Fungal Ecology and Field Study Techniques
Week 13	Lab 13: Fungal Pathogens and Disease Diagnosis
Week 14	Lab 14: Fungal Symbiotic Associations (Mycorrhizae, Lichens)
Week 15	Lab 15: Research Project in Fungi Taxonomy: Independent Study on a Taxonomic Group or Fungal Species

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Kirk, P. M., Cannon, P. F., Minter, D. W., & Stalpers, J. A. (2008). Dictionary of the Fungi. CABI.	No
Recommended Texts	Hibbett, D. S., & Taylor, J. W. (2013). Fungi: Evolution and Diversity. Academic Press.	No
Websites	http://www.mycobank.org/	

Grading Scheme

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