Academic Program Description Form

University Name: Al-Muthanna

Faculty/Institute: .Science of collage

Scientific Department: Biology

Academic or Professional Program Name: .BSc

Final Certificate Name: .BSc in Biology

Academic System: .....

Description Preparation Date: 26\5\2024

File Completion Date:26\5\2024

Signature:

Head of Department Name:

Dr. Hanaa Ali Aziz

Date:26/5/2024

Signature:

Scientific Associate Name:

أ.م. ميثم عباس مكي

Date: 26/5/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

Approval of the Dean

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Biochemistry**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**SCI2408**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Muna Hasson Saoudi		**e-mail**		
Module Leader's Acad. Title	lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	**Muna Hasson**		**e-mail**	Muna.hasson@mu.edu .iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	01/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	The course unit assumes prior knowledge acquired from analytical chemistry 1 for biology students and Organic Chemistry 1 for biology students.	**Semester**	1 and 2
Co-requisites module	English language requirements You must demonstrate that your English is good enough for you to successfully complete your course.	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	This module aims to teach you core concepts in biochemistry including topics on structure of carbohydrates , proteins, lipids, nucleic acids , enzyme kinetics and metabolic pathways. The module will also provide a background to fundamental aspects of chemistry. This module provides you with the core knowledge and skills to enhance performance in the area of biological chemistry.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	By the end of the module it is expected that the student will be able to: 1-Recognise the chemical elements for life and the basic processes of the cell. 2- Describe the main chemical components of cells, their structural properties, how these relate to their functions, and how they are altered during cellular processes 3-Explain theoretical frameworks (such a Michaelis Menten kinetics, the laws of thermodynamics and the chemiosmotic theory) that allow us to understand function of biological molecules and cells 4-Integrate knowledge about metabolism of carbohydrates & lipids and phototrophic metabolism and how they relate to energy metabolism via ATP 5-Relate knowledge of biological molecules to health and disease and to their application in biotechnology 6-Analyse and evaluate enzyme kinetics data
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction Cell structure and the cell cycle. Biomolecules introduction. Overview roles of the elements (with a focus on Carbon) and water in the cell. Overview of amino acids as 'building blocks'. Thermodynamics and chemical reactions in the cell. Evolution and conservation. Minerals and vitamins in the body and their function. 2 hrs Carbohydrate chemistry /classification, Structure of monosaccharide 2hrs Isomerism/structural l and stereoisomerism, Chemical properties of monosaccharide 2hrs Biologically important sugar derivatives monosaccharaides, Oligosaccharides And polysaccharides 4hrs

	Protein structure Amino acids and their functional groups. Linking them together through peptide bonds. Structure/Function relationships 4hrs . Primary, secondary, tertiary and quaternary protein structure in detail. Post-translational modifications, e.g. glycosylation. 4hrs Lipid: introduction ,classification, biological Function of lipids, fatty acids, structure ,& properties, chemical reactions of fatty acids ,Triglyceride ,Neutral glycerides phosphoglyceride& non glycerides lipids, Sphingolipids ,Steroids, bile acids ,sex hormones,vitD. carotenoids, complex lipids ,lipoproteins 4 hrs. Nucleic acids ,nitrogen bases, nucleotides ,Types of RNA,DNA 4 hrs. Enzymes in action Enzyme catalysis, role of energy of activation. Chemical reactions in the cell, control through negative/positive feedback. Active site features and characteristics. Enzyme kinetics and enzyme inhibition principles (Michaelis-Menten and Lineweaver-Burk analysis). Competitive and non-competitive & uncompetitive inhibition. Mechanism of action of enzymes. 4 hrs. Metabolism Introduction 2hrs Overview of interacting biochemical pathways in the cell and their regulation/cross-talk.2 hrs Focus primarily on ATP generation via carbohydrate metabolism through Glycolysis, 4hrs Krebs cycle and oxidative phosphorylation.4hrs Fate of pyruvate. Gluconeogenesis. 4hrs Regulation of metabolic pathways, energy demands.6 hrs Fatty acid metabolism, beta-oxidation , ketone bodies 8 hrs

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Practical labs Practical / Skill set tests / Lab write-up reports. In the practical sessions, students will focus on improving their practical skill set, while also dealing with obtaining and analysing data in addition to drawing conclusions from the data. Students will also perform formative competency skill set tests (e.g. pipette tests, graph tests, data handling test, data interpretation tests etc.) all generated to assist understanding and improve technique. Students will work on an interactive lab manual which will contain in-class exercises for review. Group (Peer-assisted learning) work will be encouraged. The requirement to complete exercises in the practical manual and/or submit certain laboratory reports in combination with ongoing formative assessments is intended to act as serious encouragement for students to focus on the laboratory work. Marks for these exercises/reports will be based on students' ability to record primary data, calculate derivatives from these, display these data, comment on their meaning in the context of the actual experiment and associated theory, and discuss limitations to the experiment and the results obtained. An incremental marking system will be employed to improve feedback uptake while a suite of technologies will be utilised to enhance assessment in practical sessions (see www.teamshp.ie). For example, some aspects such as electronic lab notebooks, may be employed. Short answer / diagram / MCQ exams A continuous assessment exam will take place in the module. This will require the students to answer selected short answer questions in addition to drawing diagrams of cellular processes. Formative quizzes will be performed throughout the module to facilitate learning and understanding of topics covered in addition to preparing the students to the style of this summative exam. Lectures will deliver core content; providing students with the opportunity to acquire the information to enhance their knowledge and understanding of basic undergraduate-level organic chemistry. This will be complemented group discussions and tutorials to allow students to apply this learning to specific exemplar problems. Directed study provides students with the opportunity to undertake guided reading and to develop their own portfolio of learning to enhance transferable skills and knowledge. Methods of assessment may include: 1-Essays 2-small group tutorials and workshops 3-Laboratory reports 4-Scientific posters 5-Online end-of-module book exams 6-oral and written tests 7-Final year test

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	51	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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% (5)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	20% (20)	7	LO # 1-7
	Final Exam	4hr	40% (40)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to biochemistry
Week 2	Carbohydrates , Its Spread and importance study
Week 3	Mono saccharide, their properties, their classification
Week 4	Di saccharides , poly saccharides, starch
Week 5	Fats, their classification, their properties, neutral fats, phosphatic fats, saphencomylene, sugary fats
Week 6	Waxes, steroids, terrenes, serprosides
Week 7	Nucleotides, their importance, their presence, their composition, their characteristics.
Week 8	Nucleic acids, DNA characteristics, composition, Watson Creek model, loss of natural properties of DNA

Week 9	DNA, its composition, DNA (carrier, ribosome, messenger)
Week 10	Transmission of genetic information and protein composition
Week 11	Vitamins and enzymes, vitamins dissolved in water
Week 12	Enzymes, Composition, Importance, Classification, Enzyme Name
Week 13	Kinetic properties of enzymes, mechanism of action of enzymes (alosteric)
Week 14	Bioenergy
Week 15	Biologic oxidation
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Polysaccharides: Tests of mollish, Test of Benedict
Week 2	Parfoid Test, Selfanov Test
Week 3	Beill Test, Test of Osazone
Week 4	Analyzed of Di saccharides by acid Test and compared it with Mono saccharide
Week 5	Test of polysaccharides.
Week 6	Diagnosis of unknown sugary substance
Week 7	Determination of the amount of blood glucose in a kink method
Week 8	Test of lipids, study their properties and test their solubility in polarized and non polarized solvents
Week 9	Find the number of iodine (Test non-saturation).
Week 10	Find the number of acidity
Week 11	Estimate the amount of cholesterol in the blood
Week 12	Amino acids and proteins Test
Week 13	The color Tests includes: Ninhydrine Test
Week 14	Mellon Test, Sakakuji Test Deposition of proteins and study of the properties of albumins and globulins

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the e-Library?**
Required Texts	**David Nelson and Michael Cox. (2017), Lehninger Principles of Biochemsitry,**	Yes
Recommended Texts	**Mary K. Campbell, Shawn O'Farrell. (2018), Biochemistry, 9th. Brooks Cole; Cengage.**	yes
Websites	**Online publication database],** www.pubmed.com. **Bioconnect Ireland;** www.biotechnologyireland.com. **Online Bioinformatics Tools: www.expasy.org.**	

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	**Biotechnology**			**Module Delivery**	
Module Type	**Elective**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐**Practical** ☐ **Seminar**	
Module Code	**BIO48032**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level		**4**	**Semester of Delivery**		**8**
Administering Department		BIO	**College**	COS	
Module Leader	**Name: Laith AbdulHassan M. Jawad**		**e-mail**	**E-mail: atabdlih@mu.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			**Version Number**		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To develop skills and understanding of biotechnology through the application of techniques. 2. To understand mainly molecular biotechnology. 3. This course deals with the basic concept of biotechnology and mainly genetic engineering.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Students will demonstrate knowledge of the central dogma of biology and predict outcomes when the process malfunctions. 2. Students will demonstrate ability to use evolutionary theory and related equations to model and predict population change or stability. 3. Students will demonstrate ability to evaluate the impact of structure/part modification on a biological system and/or relationships between systems. 4. Students will demonstrate application of the formal practices of observation, experimentation, and hypothesis testing. 5. Students will demonstrate ability to evaluate pertinent values to ethical dilemmas using multiple ethical frameworks. 6. Students will demonstrate ability to communicate knowledge about a research topic including organization, critical analysis, content, presentation, formatting, and stylistic choices
Indicative Contents المحتويات الإرشادية	Introduction to biotechnology Study DNA, RNA, and Protein Synthesis recombinant DNA Technology Restriction enzymes , types, how to cut Plasmid cloning vectors Plasmid cloning vectors pBR322 Other cloning vectors Transformation and selection Use bioinformatics tools for gene design Cloning DNA for recombinant protein expression recombinant protein expression in E. coli recombinant protein expression eukaryotic system Purification of recombinant protein Creating cDNA library Bioinformatics, Genomics, and Proteomics

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**74**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**5**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**51**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**3**
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to biotechnology
Week 2	Study DNA, RNA, and Protein Synthesis
Week 3	recombinant DNA Technology
Week 4	Restriction enzymes , types, how to cut
Week 5	Plasmid cloning vectors
Week 6	Plasmid cloning vectors pBR322
Week 7	Other cloning vectors
Week 8	Transformation and selection
Week 9	Use bioinformatics tools for gene design
Week 10	Cloning DNA for recombinant protein expression
Week 11	recombinant protein expression in E. coli
Week 12	recombinant protein expression eukaryotic system
Week 13	Purification of recombinant protein
Week 14	Creating cDNA library
Week 15	Bioinformatics, Genomics, and Proteomics

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to biotechnology
Week 2	Lab 2: DNA and RNA extraction
Week 3	Lab 3: Gel electrophoresis
Week 4	Lab 4: Cut DNA by restriction enzymes
Week 5	Lab 5: Ligation with cloning vectors
Week 6	Lab 6: Transformation to E. coli
Week 7	Lab 7: Protein expression and purification

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Molecular biotechnology by Patten,, 4th edition. 2010	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

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	Computer Science II			**Module Delivery**	
Module Type	B			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UNI2415**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	2		**Semester of Delivery**		
Administering Department	Biology . Dep.		**College**	College of science	
Module Leader	**Nawrass N. Ameen**		**e-mail**	Nawrass@mu.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	**10/06/2023**		**Version Number**	**1.0**	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**1. To develop problem solving skills and understanding of principles of computer science through the application of software.** **2. To understand the purpose of using Microsoft word.** **3. This course deals with the basic concept of Microsoft word.** **4. To differentiate between the orders.** 5. **To perform steps of preparing project.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**1. Recognize how the computer device works.** **2. List the various terms associated with computers.** **3. Summarize what is meant by a Bit and Byte.** **4. Describe RAM and ROM.** 5. **Define Hardware and software.**
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following:** <u>Computer science, software and hardware</u> **UNIT – I** Introduction to Computers Computer system: characteristics and capabilities. Computer Hardware and Software: Block Diagram of a Computer, Different Data Processing: Data, Data Processing System, Storing Data, Processing Data. Types of Computers: Analogue, Digital, Hybrid, General and Special Purpose Computers. Generation of Computers. Computer Systems: Micros, Minis & Main-frames. Limitations of Micro Computer. [9 hrs] **UNIT –II** Computer Peripherals Introduction to Input Devices: Categorizing Input Hardware, Keyboard, Direct Entry — Card Readers, Scanning Devices — O.M.R., Character Readers, Thumb Scanner, MICR, Smart Cards, Voice Input Devices, Pointing Devices — Mouse, Light Pen, Touch Screen. Computer Output: Output Fundamentals, Hardcopy Output Devices, Impact Printers, Non-Impact Printers, Plotters, Computer output Microfilm/Microfiche (COM) systems, Softcopy Output Devices, Cathode Ray Tube, Flat Screen Technologies, Projectors, Speakers. [9 hrs] **UNIT – III** Basic Components & Storage Central Processing Unit: The Microprocessor, control unit, A.L.U., Registers, Buses, Main Memory, Main Memory (RAM) for microcomputers, Read Only Memory (ROM). Storage Devices: Storage Fundamentals, Primary and Secondary Storage, Data Storage and Retrieval Methods — Sequential, Direct & Indexed Sequential, Tape Storage and Retrieval Methods Tape storage Devices, characteristics and limitations,

	Direct access Storage and Microcomputers – Hard Disks, Disk Cartridges, Direct Access Storage Devices for large Computer systems, Mass storage systems and Optical Disks, CD ROM. [9 hrs] **UNIT – IV** Computer Software & Languages System Software: System software Vs. Application Software, Types of System Software, Introduction and Types of Operating Systems. Boot Loader, Diagnostic Programs, BIOS, Utility Programs. Application Software: Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages. Computer Languages: Definition, Generations of computer languages, Types of Languages, Language Processors: Assembler, Interpreter, Compiler, Linker and Loader. Programming constructs, Algorithm & flowchart. [9 hrs] **UNIT – V** Introduction to MS DOS & Windows Introduction to DOS: History and versions of DOS. Fundamentals of DOS: Physical Structure of the Disk, Compatibility of drives, Disks & DOS versions, Preparing Disks for use, Device Names. Getting Started with DOS: Booting Process (DOS, Windows, Unix), System Files and Command.com, Internal DOS Files & Directories, Elementary External DOS Commands, Additional Commands. Microsoft Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel—display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows [5 hrs] RL, RC and RLC circuits - Frequency response of RLC circuits, simple filter and band-pass circuits, resonance and Q-factor, use of Bode plots, use of differential equations and their solutions. Time response (natural and step responses). Introduction to second order circuits. Revision problem classes [4 hrs]

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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**30**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**2**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Lab Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	UNIT – I Introduction to Computers
Week 2	How computer works
Week 3	computers contents
Week 4	UNIT – II Computer Peripherals
Week 5	Computer Output
Week 6	UNIT – III Basic Components & Storage
Week 7	Storage Devices
Week 8	UNIT – IV Computer Software & Languages
Week 9	Application Software: Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages.
Week 10	Application Software: Computer Languages: Definition, Generations of computer languages, Types of Languages, Language Processors: Assembler, Interpreter, Compiler, Linker and Loader. Programming constructs
Week 11	UNIT – V Introduction to MS DOS & Windows
Week 12	Microsoft Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders.
Week 13	Microsoft Windows: Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar
Week 14	Microsoft Windows: Running applications, exploring computer, managing files and folders, copying and moving files and folders.
Week 15	Microsoft Windows: Control panel—display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	أسس الحاسب الالي	Yes
Recommended Texts	كتاب علم الحاسوب، 2010	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
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Entomotaxonomy**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio2418**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name: Mohammed Qasim Waheeb		**e-mail**	E-mail	
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail: mhmdkas@mu.edu.iq	
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 Aims أهداف المادة الدراسية	1. Providing state institutions with specialized cadres. 2. Providing students with experience in applied life sciences. 3. Preparing highly experienced cadres in life sciences and experience in knowing high-tech devices. 4. Providing students with scientific techniques in the use of devices and equipment that can be used in their theoretical and applied studies. 5. Research and study everything new in biological sciences and keep pace with scientific developments in this field.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge goals Providing the student with sufficient information to gain experience in dealing with life sciences and laboratory techniques. Establishing experience in knowing all laboratory devices and modern technologies. Providing sufficient information to keep pace with and study modern science. Developing the student's ability to remember what he learned. 1- The first level is the development of knowledge (Knowledge)) on the professional neighborhood that lives in soil and water. 2- The second level improving the level of comprehension (compactation) development of the ability to explain, predict and conclude. 3- The third level is the development of application capabilities). 4- The fourth level provides the student the ability to analyze Analysis. 5- The fifth level is to develop the student's ability to integrate ideas and information level synthesis, which is the opposite of the analysis. 6- The sixth level of evaluation of the student's ability to give a judgment to value the educated article.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1- To learn how imitation and simulation. 2- To learn Experimentation. 3- Improving the student's ability to observe Observation

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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	76	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**مقدمة عن علم الحشرات(الصفات العامة، الاهمية والاضرار)**
Week 2	**تصنيف الحشرات –صنف عديمة الاجنحة والمجنحة**
Week 3	**رتبة ذبابة مايس ورتبة الرعاشات**
Week 4	**رتبة مستقيمة الاجنحة –رتبة الشبحيات –رتبة المردان**
Week 5	**رتبة متساوية الاجنحة –رتبة جلدية الاجنحة –رتبة خالية الاجنحة**
Week 6	**رتبة القمل القارض**
Week 7	**رتبة القمل القارض**
Week 8	**رتبة القمل الماص**
Week 9	**رتبة نصفية الاجنحة وتبة متشابهةالاجنحة**
Week 10	**رتبة هدبية الاجنحة (قسم الحشرات داخلية نمو الاجنحة)**
Week 11	**شبكية الاجنحة**
Week 12	**رتبة حرشفية الاجنحة**
Week 13	**رتبة غمدية الاجنحة**
Week 14	**رتبة ثنائية الاجنحة**
Week 15	**رتبة غشائية الاجنحة**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	تصنيف رتبة عديمة الاجنحة
Week 2	رتبة ذبابة مايس ورتبة الرعاشات
Week 3	رتبة مستقيمة الاجنحة –رتبة الشبحيات –رتبة المردان
Week 4	رتبة متساوية الاجنحة –رتبة جلدية الاجنحة –رتبة خالية الاجنحة
Week 5	رتبة القمل القارض
Week 6	رتبة القمل القارض
Week 7	رتبة القمل الماص
Week 8	رتبة نصفية الاجنحة وتبة متشابهةالاجنحة
Week 9	رتبة هدبية الاجنحة (قسم الحشرات داخلية نمو الاجنحة)
Week 10	شبكية الاجنحة
Week 11	رتبة حرشفية الاجنحة
Week 12	رتبة غمدية الاجنحة
Week 13	رتبة ثنائية الاجنحة
Week 14	رتبة غشائية الاجنحة
Week 15	الحشرات المفيدة والضارة طبيا

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	منهاج علم تصنيف الحشرات المقرر	Yes
Recommended Texts	اساسيات في تصنيف الحشرات (رضوان محمد توفيق2010)	No
Websites	المكتبة الالكترونية للحشرات	

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**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio2303**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name: Mohammed Qasim Waheeb		**e-mail**	E-mail	
Module Leader's Acad. Title	Assist. Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail: mhmdkas@mu.edu.iq	
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 Aims أهداف المادة الدراسية	1. Providing state institutions with specialized cadres. 2. Providing students with experience in applied life sciences. 3. Preparing highly experienced cadres in life sciences and experience in knowing high-tech devices. 4. Providing students with scientific techniques in the use of devices and equipment that can be used in their theoretical and applied studies. 5. Research and study everything new in biological sciences and keep pace with scientific developments in this field.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge goals Providing the student with sufficient information to gain experience in dealing with life sciences and laboratory techniques. Establishing experience in knowing all laboratory devices and modern technologies. Providing sufficient information to keep pace with and study modern science. Developing the student's ability to remember what he learned. 1- The first level is the development of knowledge (Knowledge)) on the professional neighborhood that lives in soil and water. 2- The second level improving the level of comprehension (compactation) development of the ability to explain, predict and conclude. 3- The third level is the development of application capabilities). 4- The fourth level provides the student the ability to analyze Analysis. 5- The fifth level is to develop the student's ability to integrate ideas and information level synthesis, which is the opposite of the analysis. 6- The sixth level of evaluation of the student's ability to give a judgment to value the educated article.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. 1- To learn how imitation and simulation. 2- To learn Experimentation. 3- Improving the student's ability to observe Observation

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 type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	51	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**مقدمة عن علم الحشرات(الصفات العامة، الاهمية والاضرار)**
Week 2	**مناطق جسم الحشرة(الراس وزوائده ، انواع اجزاء الفم)**
Week 3	**الصدر وزوائده**
Week 4	**البطن وزوائدها**
Week 5	**التحول وانواعه، اليرقات وانواعه**
Week 6	**الجهاز الهضمي(مكوناته واجزائه)**
Week 7	**الهضم والاخراج**
Week 8	**الجهاز التنفسي- التركيب والوظيفة**
Week 9	**جهاز الدوران – التركيب والوظيفة**
Week 10	**الجهاز العصبي – التركيب والوظيفة**
Week 11	**جهاز الابراز – اعضاء الابراز ووظائفها**
Week 12	**الجهاز التناسلي الذكري والانثوي**
Week 13	**التحول الشكلي**
Week 14	**تصنيف المجاميع الحشرية**
Week 15	**مراجعة**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: **مقدمة عن علم الحشرات(الصفات العامة، الاهمية والاضرار)**
Week 2	Lab 2: **مناطق جسم الحشرة(الراس وزوائده ، انواع اجزاء الفم)**
Week 3	Lab 3: **الصدر وزوائده**
Week 4	Lab 4: **البطن وزوائدها**
Week 5	Lab 5: **التحول وانواعه، اليرقات وانواعه**
Week 6	Lab 6: **الجهاز الهضمي(مكوناته واجزائه)**
Week 7	Lab 7: **الهضم والاخراج**
Week 8	Lab 8: **الجهاز التنفسي- التركيب والوظيفة**

Week 9	Lab 9:**جهاز الدوران – التركيب والوظيفة**
Week 10	Lab10:**الجهاز العصبي – التركيب والوظيفة**
Week 11	Lab 11:**جهاز الابراز – اعضاء الابراز ووظائفها**
Week 12	Lab 12: **الجهاز التناسلي الذكري والانثوي**
Week 13	Lab 13:**التحول الشكلي**
Week 14	Lab 14: **تصنيف المجاميع الحشرية**
Week 15	**مراجعة**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	**منهاج علم الحشرات المقرر**	Yes
Recommended Texts	**الأستاذ الدكتور / أسامه باحارث** **أستاذ علم الحشرات– بقسم الأحياء جامعة أم القرى**	No
Websites	**المكتبة الالكترونية للحشرات**	

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**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio2306**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Nuha Mohammed Mousa		**e-mail**	E-mail nuhamoh@mu.edu.iq	
Module Leader's Acad. Title	Ast. 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 Aims أهداف المادة الدراسية	Invertebrates are animals without a backbone. They come in many shapes, sizes and colours. This chart covers what you are most likely to find during an OPAL survey: insects, arachnids, molluscs, myriapods and crustaceanse Vertebrates and Invertebrates is an excellent lesson for teaching students how to classify animals. Specifically, they will learn that vertebrates are animals with a backbone and that invertebrates are animals without a backbone. They will likewise differentiate between the environments of the two classes. Knowing the traits of these environments will help them discern if an animal has a backbone. This lesson is for students in 3rd grade, 4th grade, and 5th grade.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Students will first learn to define classification. This is the process by which scientists organize animals by their similar or shared traits. 2. Students will learn that scientists have yet to discover every species of every living organism on the planet. 3. Students will learn that the phylum level is where they can discover whether an animal is a vertebrate or invertebrate. After completing this course successfully, a student should be able to discuss the evolution of invertebrates, understand the differences among phyla, identify characteristic anatomical features of representative organisms in each phylum, recite the taxonomy and hierarchy of invertebrate binomial nomenclature, and intelligently discuss the ecological role of representative organisms in the major phyla.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - Vertebrates and Invertebrates (Evaluation) When it comes to animals, scientists use classification charts to help them organize all the different animals into groups. They start with the most general traits and then divide them into smaller and smaller groups. The lesson describes the concept of a hierarchical representation of species through and upside down triangle with different colors to represent smaller and smaller groups. The differences between these two groups goes beyond the presence or lack of a backbone. The lesson describes how we can narrow things down further via the Chordata classification level. This level classifies animals by whether or not, at some stage of development, they had a flexible spinal column and nerve cord running along their back. Here is a list of the vocabulary words students will learn in this lesson plan: • Classification: the process scientists use to organize the things they are studying by their similar traits • Hierarchy: a system of ordering in which the highest order of representation appears at the top and the lowest at the bottom • Taxonomic rank: narrowing something down by certain characteristics in lower and lower levels • Invertebrate: an animal without a backbone • Phylum (phyla): the level below kingdom and above class in the animal classification chart

	Part B –Invertebrate phyla (ORGANISMS AND THEIR ENVIRONMENT ,Habitats and Ecology This course is a survey of the invertebrate phyla with lectures on ecology, evolution, and behavior. Part C – study details of some Examples in invertebrates (Adaptive Characteristics Community Structure, SURVEY OF PHYLA)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted to study the invertebrate (animal) phyla. It will be expected to be familiar with the names and characteristics of the phyla, be able to identify specimens and their morphology, and discuss their ecology and evolution. We will leave for field trips promptly when lab begins, so be on time. You will not be allowed to make up missed labs

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	51	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction - Vertebrates and Invertebrates, classification theories
Week 2	Phylum porifera
Week 3	Characteristics , classification , types of cell,
Week 4	Phylum cindaria
Week 5	Life cycle, nutrition, study of Obelia as an example
Week 6	Phylum Platyhelminthes
Week 7	Classification , characteristics,
Week 8	Phylum Annelida
Week 9	Classification , study of earth worm as an example
Week 10	Phylum Arthropoda
Week 11	Classification , life cycle , nutrition
Week 12	Phylum Mollusca
Week 13	Types, life cycle, characteristics
Week 14	Phylum Echinodermata
Week 15	Life cycle , study of
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: diagnosis of protozoa
Week 2	Lab 2: examination of porifera by images
Week 3	Lab 3: detection of Platyhelminthes
Week 4	Lab 4: detection of nematode
Week 5	Lab 5: detection of Annelida
Week 6	Lab 6: examination of Arthropoda by images and videos
Week 7	Lab 7: examination of Mollusca

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	A BRIEF IN INVERTEBRATE	No
Recommended Texts	Invertebrates 2021-2022	no
Websites	https://core.ac.uk/download/pdf/11017224.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
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Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

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

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Microbiology I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio2305**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Dhay Ali Azeez		**e-mail**	Dhaybio_85@mu.edu.iq	
Module Leader's Acad. Title	Lecture		**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 Aims	1. Identifying the location of microorganisms among other organisms. 2.Identify the types and composition of microorganisms (parasites, (microorganisms that cause nosocomial infections and viruses). 3.Knowledge of pathogenic microorganisms, their exact classification and structure, and identification of the composition of the bacterial cell wall. 4.Identify the methods of reproduction and growth of the types of microorganisms. 5.Learn about the most important benefits of microorganisms in the field of industries, food production, antibiotics, vaccines, and others.
Module Learning Outcomes	1- The student's knowledge of the different types of microorganisms and the scientific classification used for these microorganisms. 2- The student's knowledge of the physiological and nutritional requirements of these organisms, in addition to the different environments in which these microorganisms may live. 3- Identify the life cycle, methods of reproduction and transmission of microorganisms (bacteria, parasites and viruses) and the optimal conditions for their living. 4- The student will know the infections and diseases that may be caused by these microorganisms (bacteria, parasites and viruses), and thus learn how to prevent or limit the occurrence of these diseases. 5- Identifying the different microorganisms that cause nosocomial infections and how to control them and limit their spread
Indicative Contents	1-The history of microbiology, the beginnings of its discovery, and the most important scientists who contributed to its discovery (10hr) 2- Its location within the rest of the neighborhoods and the study of the beginnings of taxonomy and the five Kingdom system(10hr) 3-Classification of microorganisms(8hr) 4-Bacteria, parasites, fungi, archaea, algae, and..... a general study of each type and knowledge of their most important characteristics in general(8hr) 5-The most important benefits of microorganisms in all fields, including industries, fermentation, medicine, pharmacy, and the manufacture and production of vaccines(10hr) 6-Types of microorganisms and a comparison between eukaryotic and

	prokaryotic cells: a study of archaea, the first prokaryotic organisms(10hr) 7-Bacteria: classification of bacteria according to their shapes, according to their components, according to their nutrition, according to their movement, and according to the ability of the wall to take the dye, and to study examples of each type(10hr) 8-Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit(1 hr) 9-A study of the structure of the gram positive and negative bacterial cells wall and study their characteristics, composition and the most important species belonging to them. (10hr) 10-Study of the most important essential and secondary structures in the bacterial cell (10hr) 11-Mods of nutriential in bacteria with examples of each type(10hr) 12-Mods of growth and reproduction in microorganisms and compare them with each other(10hr) 13-Classification of parasites The most important types that are included under its specifications, its general characteristics, methods of living and reproduction, and the life cycle of an example of only one type of them(10hr) 14-A study of pathogenesis and how disease occurs within host cells, and a study of the most important characteristics of bacterial toxins(10hr) 15-Sterilization and disinfection: study of physical and chemical methods to control the growth and reproduction of microorganisms(10hr)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**Skill objectives of the course** 1- The student will be able to use a light microscope to observe and diagnose microorganisms. 2- The student will be able to diagnose pathogenic microorganisms. 3- The student will be able to differentiate between the different microscopic species through knowledge of their phenotypical characteristics and internal structures, as he can diagnose them and determine their scientific type. 4- The student will be able to diagnose the microorganisms that cause various diseases and how to avoid infection with these pathogens by knowing the methods of transmission to them. 5- Avoid infection by staying away from eating contaminated food

	Transferred general and qualifying skills (other skills related to employability and personal development) 1- The student's knowledge of the different methods of diagnosis. 2- Self-development through reviewing the latest developments in the field of specialization 3- Contribute to and participate in training courses, lectures and scientific seminars prepared for this purpose. 4- Working in a team spirit with others to ensure that they face the difficulties and problems that they may face in the applied practical aspect, cross-pollination of ideas, and produce sound scientific opinions.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	51	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	The history of microbiology, the beginnings of its discovery, and the most important scientists who contributed to its discovery
Week 2	Its location within the rest of the neighborhoods and the study of the beginnings of taxonomy and the five Kingdom system
Week 3	Classification of microorganisms
Week 4	Bacteria, parasites, fungi, archaea, algae, and..... a general study of each type and knowledge of their most important characteristics in general
Week 5	The most important benefits of microorganisms in all fields, including industries, fermentation, medicine, pharmacy, and the manufacture and production of vaccines
Week 6	Types of microorganisms and a comparison between eukaryotic and prokaryotic cells: a study of archaea, the first prokaryotic organisms
Week 7	Bacteria: classification of bacteria according to their shapes, according to their components, according to their nutrition, according to their movement, and according to the ability of the wall to take the dye, and to study examples of each type
Week 8	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit(1 hr)
Week 9	A study of the structure of the gram positive and negative bacterial cells wall and study their characteristics, composition and the most important species belonging to them.
Week 10	Study of the most important essential and secondary structures in the bacterial cell
Week 11	Mods of nutriential in bacteria with examples of each type
Week 12	Mods of growth and reproduction in microorganisms and compare them with each other
Week 13	Classification of parasites The most important types that are included under its specifications, its general characteristics, methods of living and reproduction, and the life cycle of an example of only one type of them
Week 14	A study of pathogenesis and how disease occurs within host cells, and a study of the most important characteristics of bacterial toxins
Week 15	Sterilization and disinfection: study of physical and chemical methods to control the growth and reproduction of microorganisms
Week 16	Review before the final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Laboratory (1): General instructions for students while working in microbiology laboratories An overview of some of the devices and tools available in microbiology laboratories
Week 2	Laboratory (2): Methods of sterilization and identification of the most important devices used for sterilization inside the laboratory and the purpose of each device
Week 3	Laboratory 3: Types of culture media, method of preparing culture media
Week 4	Laboratory (4): Methods of staining bacteria, gram stain as an example of the dyes used in staining bacteria inside the laboratory
Week 5	Laboratory (5): Methods of cultivation and development of microorganisms inside the laboratory
Week 6	Laboratory (6): Methods of bacterial examination
Week 7	Lab 7: Microscopic appearance of bacteria
Week 8	Laboratory (8): Biochemical tests to identify bacterial species
Week 9	Laboratory (9): confirmatory tests for bacteria
Week 10	Laboratory (10): bacterial growth

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Medical microbiology Human microbiology Bacteria in biology, biotechnology and medicine	Yes
Recommended Texts	1- Patrick R. Murray, Ken S. Rosenthal and Michael A. Pfaller (2021). Medical microbiology ninth edition. E lsever Inc. 2- Louise Hawley, Richard J. Ziegler& Benjamin L. Clarke (2014) : Microbiology and immunology, 6th edition. Lippincott Williams & Wilkins co. USA. 3- Patrick R. Murray (2018): Basic Medical Microbiology, Elservier.	No
Websites	Web sites of Microbiology	

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	**Microbiology II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio24111**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Dhay Ali Azeez		**e-mail**	Dhaybio_85@mu.edu.iq	
Module Leader's Acad. Title	Lecture		**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 Aims	1.Learn about the body's immunity and its resistance against diseases, the most important immune cells and their role in protecting the body from diseases 2.Identify the structure of the genetic material in microorganisms 3.Identify the types of microorganisms (bacteria, Fungi and viruses). 4.Knowledge of pathogenic microorganisms, their exact classification and structure, and identification of the composition of the cell wall. 5.Identify the most important food , soil, water microorganisms. 6.Learn about the most important benefits of microorganisms in the field of industries, food production, antibiotics, vaccines, and others.
Module Learning Outcomes	1- The student's knowledge of the different types of microorganisms and the scientific classification used for these microorganisms. 2- The student's knowledge of how human body fight against microbe and , the most important immune cells and their role in protecting the body from diseases. 4- The student will know the infections and diseases that may be caused by these microorganisms (bacteria, parasites and viruses), and thus learn type of microorganism and there disease and how to prevent or limit the occurrence of these diseases. 5- Identifying the different microorganisms that cause infections to human and how transmitted to human by water and food and how to control them and limit their spread
Indicative Contents	1-Introduction to immunology - types of immunity, innatee immunity, adaptive immunity (10hr) 2-Immune system: Immune cells – antigens, Epitope, Hapten, immunoglobulin's (10hr) 3-Bacterial genetics : gene, genome, plasmid, chromosome, protein, DNA&RNA structure, complementation, antiparallel strands (10hr) 4-Pathogenic Bacteria - Gram positive bacteria- types - general characteristic-staphylococci, streptococci (10hr) 5-Pathogenic Bacteria - Gram-negative bacteria – types - general characteristic- enterobacteriaceae – other species (10hr) 6-Introduction to mycology – general characteristic of fungi- benefits and harm effects of fungi(10hr) 7-Classification of fungi, Pathogenicity of fungi , mycoses disease(10hr)

	8-Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit(1 hr) 9-Introduction to virology –important terms - general characteristic of viruses – chemical composition of viruses (10hr) 10-Classification of viruses- replication of viruses- physical &chemical agents effect of viruses(10hr) 11-Food Microbiology: foof safety- probiotics – mycotoxin -An introduction to the most important food microorganisms - their importance (8hr) 12-Industrial Microbiology : An introduction to the most important industrial microorganisms - their importance - their applications(8hr) 13-Water Microbiology : An introduction to the most important microorganisms in water - their types – waterborne diseases (8hr) 14-Soil Microbiology : An introduction to the most important soil microorganisms - their types(8hr)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**Skill objectives of the course** 1- The student will be able to use a light microscope to observe and diagnose microorganisms. 2- The student will be able to diagnose pathogenic microorganisms. 3- The student will be able to differentiate between the different microscopic species through knowledge of their phenotypical characteristics and internal structures, as he can diagnose them and determine their scientific type. 4- The student will be able to diagnose the microorganisms that cause various diseases and how to avoid infection with these pathogens by knowing the methods of transmission to them. 5- Avoid infection by staying away from eating contaminated food **Transferred general and qualifying skills (other skills related to employability and personal development)** 1- The student's knowledge of the different methods of diagnosis. 2- Self-development through reviewing the latest developments in the field of specialization 3- Contribute to and participate in training courses, lectures and scientific

	seminars prepared for this purpose. 4- Working in a team spirit with others to ensure that they face the difficulties and problems that they may face in the applied practical aspect, cross-pollination of ideas, and produce sound scientific opinions.

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	51	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to immunology - types of immunity, innatee immunity, adaptive immunity
Week 2	Immune system: Immune cells – antigens, Epitope, Hapten, immunoglobulin’s
Week 3	Bacterial genetics : gene, genome, plasmid, chromosome, protein, DNA&RNA structure, complementation, antiparallel strands

Week 4	Pathogenic Bacteria - Gram positive bacteria- types - general characteristic-staphylococci, streptococci
Week 5	Pathogenic Bacteria - Gram-negative bacteria – types - general characteristic- enterobacteriaceae – other species
Week 6	Introduction to mycology – general characteristic of fungi- benefits and harm effects of fungi
Week 7	Classification of fungi, Pathogenicity of fungi , mycoses disease
Week 8	Mid-term Exam + Unit-Step Forcing, Forced Response, the RLC Circuit(1 hr)
Week 9	Introduction to virology –important terms - general characteristic of viruses – chemical composition of viruses
Week 10	Classification of viruses- replication of viruses- physical &chemical agents effect of viruses
Week 11	Food Microbiology: foof safety- probiotics – mycotoxin -An introduction to the most important food microorganisms - their importance
Week 12	Industrial Microbiology : An introduction to the most important industrial microorganisms - their importance - their applications
Week 13	Water Microbiology : An introduction to the most important microorganisms in water - their types – waterborne diseases
Week 14	Soil Microbiology : An introduction to the most important soil microorganisms - their types
Week 15	Review before the final exam
Week 16	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab (1): General instructions for students while working in microbiology laboratories An overview of some of the devices and tools available in microbiology laboratories
Week 2	Lab (2): Methods of sterilization and identification of the most important devices used for sterilization inside the laboratory and the purpose of each device
Week 3	Lab 3: Types of culture media, method of preparing culture media
Week 4	Lab (4): appearance of bacteria
Week 5	Lab (5): Methods of staining bacteria, smear preparation methods
Week 6	Lab (6): gram stain
Week 7	Lab (7): acid fast stain

Week 8	Lab (8): spore stain, capsule stain, flagella stain
Week 9	Lab (9): Biochemical tests to identify bacterial species
Week 10	Laboratory (10): bacterial account

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Medical microbiology Human microbiology Bacteria in biology, biotechnology and medicine	Yes
Recommended Texts	1- Patrick R. Murray, Ken S. Rosenthal and Michael A. Pfaller (2021). Medical microbiology ninth edition. E lsever Inc. 2- Louise Hawley, Richard J. Ziegler& Benjamin L. Clarke (2014) : Microbiology and immunology, 6th edition. Lippincott Williams & Wilkins co. USA. 3- Patrick R. Murray (2018): Basic Medical Microbiology, Elservier.	No
Websites	Web sites of Microbiology	

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
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	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**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio24010**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name Nuha Mohammed Mousa		**e-mail**	E-mail nuhamoh@mu.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 Aims أهداف المادة الدراسية	1. Discuss the various types of parasites and hosts. 2. Explain the relationship between a parasite and the host and their effects. 3. Discuss in detail the classification of medically important parasites. 4. Explain the difference between the Cestodes, Nematodes, Trematodes and protozoa
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	5. They will be able to recognize of parasites which are important for human health and caused disease. 6. They recognize specific and nonspecific parasites to human. 7. They comprehension biological characteristic of human parasites. 8. They will be able to define human parasites after identify of them. 9. They apply direct and indirect parasites identify methods and evaluate the results. 10. They comprehension how analysis of the intestinal, blood and tissue parasites. 11. They will be able to interpret infection ways and clinical problems of human parasites. 12. They interpret parasitos identify of human parasites. 13. They will be able to comprehension protection from parasitos depending on parasite species and treatment methods. 14. They question various human parasites how can be disease factor. 15. They express in different parasitos situations which treatment method can be applicable
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part A - ASSOCIATION BETWEEN PARASITE AND HOST A parasite is a living organism, which takes its nourishment and other needs from a host; the host is an organism which supports the parasite. The parasites included in medical parasitology are protozoa, helminthes, and some arthropods. (See box 1 for broader classification of parasites). The hosts vary depending on whether they harbor the various stages in parasitic development Part B - BASIC CONCEPTS IN PARASITOLOGY and CLASSIFICATION OF PARASITOLOGY Morphology - includes size, shape, color and position of different organelles in different parasites at various stages of their development. Geographical distribution - Even though revolutionary advances in transportation has made geographical isolation no longer a protection against many of the parasitic diseases, many of them are still found in abundance in the tropics. Host specificity, for example, Ancylostoma

	duodenale requires man as a host where Ancylostoma caninum requires a dog. Food habits, e.g. consumption of raw or undercooked meat or vegetables predisposes to Taeniasis . Environmental conditions favoring survival outside the body of the host, i.e. temperature, the presence of water, humidity etc. d. The presence of an appropriate vector or intermediate host – parasites that do not require an intermediate host (vector) for transmission are more widely distributed than those that do require vectors. Life cycle of parasites - the route followed by a parasite from the time of entry to the host to exit, including the extracorporeal (outside the host) life. It can either be simple, when only one host is involved, or complex, involving one or more intermediate hosts. A parasite's life cycle consists of two common phases one phase involves the route a parasite follows inside the body. This information provides an understanding of the symptomatology and pathology of the parasite. In addition the method of diagnosis and selection of appropriate medication may also be determined. Part C- Laboratory diagnosis depending on the nature of the parasitic infections, the following specimens are selected for laboratory diagnosis: a) Blood – in those parasitic infections where the parasite itself in any stage of its development circulates in the blood stream, examination of blood film forms one of the main procedures for specific diagnosis. For example, in malaria the parasites are found inside the red blood cells. b) Stool – examination of the stool forms an important part in the diagnosis of intestinal parasitic infections and also for those helminthic parasites that localize in the biliary tract and discharge their eggs into the intestine. c) Urine – when the parasite localizes in the urinary tract, examination of the urine will be of help in establishing the parasitological diagnosis. d) Sputum –is useful In cases where the habitat of the parasite is in the respiratory tract, e) Biopsy material - varies with different parasitic infections. f) Urethral or vaginal discharge – for Trichomonas vaginalis Indirect evidences – changes indicative of intestinal parasitic infections are: a. Cytological changes in the blood – eosiniphilia often gives an indication of tissue invasion by helminthes, a reduction in white blood cell count is an indication of kala-azar, and anemia is a feature of hookworm infestation and malaria. b. Serological tests – are carried out only in laboratories where special antigens are available. 8 Part D- Prevention and control . - measures may be taken against every parasite infectiving humans. Preventive measures designed to break the transmission cycle are crucial to successful parasitic eradication.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in specimen collection, while at the same time study many different ways in diagnosis and preservation of parasites

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	51	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	General Parasitology Association between parasite and host : Effect of parasites on the host ,Classification of medical parasitology ,General characteristics of medically important parasites .
Week 2	Amoebiasis ,Entamoeba Histolytica , Other Amebae inhabiting the alimentary canal , Pathogenic free-living amoebae
Week 3	Pathogenic Flagellates, Giardia Lamblia ,Trichomonas vaginalis , Other flagellates inhabiting the alimentary canal
Week 4	Intestinal Protozoa (Coccidia and Microsporidia)
Week 5	Malaria and Babesiosis
Week 6	Leishmaniasis ,Old World leishmaniasis: cutaneous and visceral leishmaniasis, New World leishmaniasis: cutaneous and visceral leishmaniasis
Week 7	Mid-term Exam (General Parasitology Association between parasite and host ,Amoebiasis , Pathogenic Flagellates)
Week 8	Trypanosomiasis ,African trypanosomiasis, Trypanosoma brucei gambiense
Week 9	Intestinal Nematodes
Week 10	Tissue Nematodes
Week 11	Intestinal Cestodes
Week 12	Tissue Cestodes: Larval Forms
Week 13	Intestinal Trematodes
Week 14	Liver and Lung Trematodes
Week 15	blood Trematodes: Schistosomes
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Collection, Preservation, and Shipment of Fecal Specimens,Safety,Fresh-specimen collection, Collection of the specimen,Number of specimens to be
Week 2	Lab 2: Specimen type, specimen stability, and need for

	preservation
Week 3	Lab 3: Antibody and Antigen Detection in Parasitic Infections
Week 4	Lab 4: Histologic Identification of Parasites
Week 5	Lab 5: Parasite Recovery: Culture Methods, Animal Inoculation, and Xenodiagnosis
Week 6	Lab 6: Fixation and Special Preparation of Fecal Parasite Specimens and Arthropods
Week 7	Lab 7: Procedures for Detecting Blood Parasites

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Diagnostic medical parasitology	no
Recommended Texts	Paniker's Textbook of Medical Parasitology	No
Websites	https://www.sciencedirect.com/topics/medicine-and-dentistry/medical-parasitology	

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	**Plant Anatomy**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio2304**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	**Biology**		**College**	**College of Science**	
Module Leader	**Emad Abd Atia**		**e-mail**	**emadabd2210@mu.edu.iq**	
Module Leader's Acad. Title	lecturer		**Module Leader's Qualification**	Master	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**1.Examine the major aspects of plants infections and how to identify the pathogens.** **2. Describe the basic structure and classification of pathogenic plant** **3. Demonstrate knowledge and understanding of the pathogenesis of the various mycoses, their clinical manifestations, diagnosis and management;.** **4. Develop and encourage the field of scientific research.** **5. To provide all students with a broad education in the basic aspects in the first year and to provide them with a higher level of knowledge and understanding of the subject chosen in their second year.** **6.Demonstrate knowledge and understanding of key aspects of practical microbiology..** **7. In the third year, students are trained in laboratory tests,.** **8. Providing fourth year students with research skills.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	A- Knowledge goals Providing the student with sufficient information to gain experience in dealing with life sciences and laboratory techniques. Establishing experience in knowing all laboratory devices and modern technologies. Providing sufficient information to keep pace with and study modern science. Developing the student's ability to remember what he learned. 1- The first level is the development of knowledge (Knowledge)) on the professional neighborhood that lives in soil and water. 2- The second level improving the level of comprehension (compactation) development of the ability to explain, predict and conclude. 3- The third level is the development of application capabilities). 4- The fourth level provides the student the ability to analyze Analysis. 5- The fifth level is to develop the student's ability to integrate ideas and information level synthesis, which is the opposite of the analysis. 1. 6- The sixth level of evaluation of the student's ability to give a judgment to value the educated article.

Indicative Contents المحتويات الإرشادية	**Introduction of plant** **Cell plant** **Cell plant** **Cell plant** **Detials study** **Collenchya&Sechlyma** **Phloem** **Xylem** **Tissue& Secretion structures** **paranchyma** **Study of growth** **Internal structure** **Internal structure** **Internal structure**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1 - The student interacts during the lecture.** **2 - The student listens attentively to an explanation.** **3 - The student interacts and participates in extra-curricular activities.** **4 - The student learns to behave professionally.** **5 - General and Transferable Skills (other skills relevant to employability and personal development)** **6. Enabling the student to pass interviews and succeed in the labor market** **7 - Enabling the student to develop himself after graduation** **8 - The assessment include one mid examinations and final examination in addition to assignment and quiz also a home works and reports.** **9. The practical assessment tests the practical skills and understanding of identification keys and methods, which when combined lead to an identification result. However, it also requires knowledge and understanding of the clinical aspects of fungal infection which might be characteristic of a particular fungus or disease type. Many of the exam questions include clinical information.** **10. The coursework essay tests the understanding of one species of fungus in terms of what type of fungus it is, how it is identified, epidemiology, what diseases it causes, what pathogenicity features it has, how infections are managed and treated. It is representative of the lectures that would have covered for a range of medically important fungi, but provides an opportunity for the individual to demonstrate their in-depth knowledge and understanding of just one species. It also enables the student to demonstrate their ability to research a topic and**

	prepare a concise report in the style of a review article from the Journal of Clinical Microbiology. **11. This course provides theoretical knowledge of fungal infections and practical skills to identify fungi in a laboratory, therefore the assessment tests both aspects.**

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	51	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
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, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**Introduction of plant**
Week 2	**Cell plant**
Week 3	**Cell plant**
Week 4	**Cell plant**
Week 5	**Detials study**
Week 6	**Collenchya&Sechlyma**
Week 7	**Phloem**
Week 8	**Xylem**
Week 9	**Tissue& Secretion structures**
Week 10	**paranchyma**
Week 11	**Study of growth**
Week 12	**Internal structure**
Week 13	**Internal structure**
Week 14	**Internal structure**
Week 15	**exam**
Week 16	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Parts of plant**
Week 2	**Cell wall formation**
Week 3	**Living contains**
Week 4	**Non living contains**
Week 5	**Permanents tissue**
Week 6	**Permanents tissue**
Week 7	**Permanents tissue**
Week 8	**Permanents tissue**

Week 9	**Permanents tissue**
Week 10	**Permanents tissue**
Week 11	**Theories**
Week 12	**Anatomy of root**
Week 13	**Anatomy of root**
Week 14	**Anatomy of root**
Week 15	**exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Plant anatomy, Richard Crang& Anrey Vassilyev ,2003.	Yes
Recommended Texts	**Basics of plant anatomy, Alany, B. O. & Salih, K. N. 1988. Third Ad.**	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	**Plant group**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio 2307**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	BIO		**College**	COS	
Module Leader	**Ibtehal Aqeel Abdulmuneem**		**e-mail**	**ibtihalaqq@mu.edu.iq**	
Module Leader's Acad. Title	**Assist. Professor**		**Module Leader's Qualification**	Ph.D	
Module Tutor	Name (if available) (التدريسي المساعد)		**e-mail**	E-mail	
Peer Reviewer Name	Name (اللجنة العلمية)		**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 Aims **أهداف المادة الدراسية**	**1.The aim of the module is to develop understanding of plant group by exploring characteristics ,definition, classification** **2. Preparing and qualifying students for preparing glass slides** **3. Develop and encourage the field of scientific research.** **4. To provide all students with a broad education in the basic aspects in the first year and to provide them with a higher level of knowledge and understanding of the subject chosen in their second year.** **5. Understand laboratory diagnosis, for different genus of algae**
Module Learning Outcomes **مخرجات التعلم للمادة الدراسية**	**By the end of the course students will be able to:** **1-Discuss the association of algae with the environment** **2-Deferentiate between divisions of Algae** **3-Describe, genus of algae with classification it**
Indicative Content **المحتويات الارشادية**	**1- مقدمة عن علم الطحالب ،الاسس المعتمددة في التصنيف،دورات الحياة، طرق التكاثر، النمو في الطحالب(10 ساعة)** **2- قسم الطحالب الخضراء المزرقة ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف (10 ساعة)** **3-قسم الطحالب الخضراء ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف (10 ساعة)** **4- صف الطحالب الكارية ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف (10 ساعة)** **5- قسم الطحالب اليوغلينية ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف (10 ساعة)** **6-امتحان منتصف الفصل (1 ساعة)** **7- قسم الطحالب الذهبية، مقدمة،الصفات العامة ، البيئة والتواجد، طرق التكاثر، التصنيف (10 ساعة)** **8- قسم الطحالب البنية ،مقدمة،الصفات العامة ، البيئة والتواجد، طرق التكاثر، التصنيف (10 ساعة)** **9- قسم الطحالب الحمراء،مقدمة،الصفات العامة ، البيئة والتواجد، طرق التكاثر، التصنيف (10 ساعة)** **10- الاهمية البيئة والاقتصادية للطحالب،الفوائد والمضار(10 ساعة)** **11-الحزازيات،مقدمة،الصفات العامة ، البيئة والتواجد، طرق التكاثر، التصنيف (7 ساعة)** **12-الحزازيات القرنية والحزازيات الكبدية (8 ساعة)** **13- قسم السرخسيات،مقدمة،الصفات العامة ، البيئة والتواجد، طرق التكاثر، التصنيف(10 ساعة)**

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1 - The student interacts during the lecture.** **2 - The student listens attentively to an explanation.** **3 - The student interacts and participates in extra-curricular activities.** **4 - The student learns to behave professionally.** **5- General and Transferable Skills (other skills relevant to employability and personal development)** **6 - Enabling the student to pass interviews and succeed in the labor market .** **7 - Enabling the student to develop himself after graduation**

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) **الحمل الدراسي المنتظم للطالب خلال الفصل**	**74**	**Structured SWL (h/w)** **الحمل الدراسي المنتظم للطالب أسبوعيا**	**5**
Unstructured SWL (h/sem) **الحمل الدراسي غير المنتظم للطالب خلال الفصل**	**51**	**Unstructured SWL (h/w)** **الحمل الدراسي غير المنتظم للطالب أسبوعيا**	**3**
Total SWL (h/sem) **الحمل الدراسي الكلي للطالب خلال الفصل**	**125**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	**– مقدمة عن علم الطحالب ،الاسس المعتمددة في التصنيف،دورات الحياة، طرق التكاثر، النمو في الطحالب**
Week 2	**قسم الطحالب الخضراء المزرقة ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف**
Week 3	**.قسم الطحالب الخضراء ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف**
Week 4	**.صف الطحالب الكارية ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف**
Week 5	**.قسم الطحالب اليوغلينية ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف**
Week 6	**امتحان منتصف الفصل**
Week 7	**قسم الطحالب الذهبية ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف**
Week 8	**قسم الطحالب البنية، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف**
Week 9	**قسم الطحالب الحمراء ، مقدمة،الصفات العامة ، البيئة والتواجد،طرق التكاثر، التصنيف**
Week 10	**الاهمية البيئية والاقتصادية للطحالب**
Week 11	**الحزازيات،مقدمة،الصفات العامة ، البيئة والتواجد، طرق التكاثر، التصنيف**
Week 12	**الحزازيات القرنية والحزازيات الكبدية**
Week 13	**السرخسيات،مقدمة،الصفات العامة ، البيئة والتواجد، طرق التكاثر، التصنيف**
Week 14	**تكملة تصنيف السرخسيات**
Week 15	**مراجعة قبل الامتحان النهائي**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**الاجهزة والمستلزمات المختبرية**
Week 2	**تركيب الجسم الخضري للطحلب**
Week 3	**قسم الطحالب الخضراء المزرقة**
Week 4	**تكملة تصنيف الطحالب الخضراء المزرقة**
Week 5	**قسم الطحالبالخضراء**
Week 6	**تكملة تصنيف الطحالب الخضراء**
Week 7	**قسم الطحالب اليوغلينية**
Week 8	**قسم الطحالب الذهبية**
Week 9	**امتحان**
Week 10	**قسم الطحالب الذهبية**
Week 11	**قسم الطحالب البنية**
Week 12	**قسم الطحالب الحمراء**
Week 13	**قسم الحزازيات**
Week 14	**تكملة تصنيف الحزازيات**
Week 15	**قسم السرخسيات**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	**علم الطحالب (د.حسين السعدي،2006)** **الاركيكونات (د.حسين السعدي،2006)**	**نعم**
Recommended Texts	PHYCOLOGY (Robert Billinger,2010)	**لا**
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	**Plant Taxonomy**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio2409**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	**Biology**		**College**	**College of Science**	
Module Leader	**Faiq H.A. Alradi**		**e-mail**	**Faiq_alradi73@mu.edu.iq**	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph. D	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**1.The aim of the module is to develop understanding of plant by exploring characteristics ,definition,** **2. Preparing and qualifying students for preparing glass slides** **3. Develop and encourage the field of scientific research.** **4. To provide all students with a broad education in the basic aspects in the first year and to provide them with a higher level of knowledge and understanding of the subject chosen in their second year.** **5. Understand laboratory diagnosis,.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**By the end of the course students will be able to:** **1- Differentiate between protoplasmic content and non protoplasmic content** **2-Deferentiate between prokaryotic cell and eukaryotic cell** **3-Describe, plant cell content** **4- Describe physiological process occur in plant**
Indicative Contents المحتويات الإرشادية	اهمية وتاريخ التصنيف انظمة التصنيف والتسمية العلمية والمراتب التصنيفية المصطلحات العامة مصطلحات الاعضاء الخضرية والتكاثرية التلقيح واهميته وانواعه الاهمية التطورية الاجهزة التكاثرية عائلات من ذوات الفلقتين عائلات من ذوات الفلقة الواحدة العائلة النخيلية النباتات العراقية صفاتها اهم النباتات الطبية صفاتها مميزاته امتحان

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**1 - The student interacts during the lecture.** **2 - The student listens attentively to an explanation.** **3 - The student interacts and participates in extra-curricular activities.** **4 - The student learns to behave professionally.** **5- General and Transferable Skills (other skills relevant to employability and personal development)** **6 - Enabling the student to pass interviews and succeed in the labor market .** **7 - Enabling the student to develop himself after graduation**

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	74	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	76	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	4hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	اهمية وتاريخ التصنيف
Week 2	انظمة التصنيف والتسمية العلمية والمراتب التصنيفية
Week 3	المصطلحات العامة
Week 4	مصطلحات الاعضاء الخضرية والتكاثرية
Week 5	التلقيح واهميته وانواعه
Week 6	الاهمية التطورية الاجهزة التكاثرية
Week 7	عائلات من ذوات الفلقتين
Week 8	العائلة البقولية
Week 9	عائلات من ذوات الفلقة الواحدة
Week 10	العائلة النخيلية
Week 11	النباتات العراقية
Week 12	صفاتها
Week 13	اهم النباتات الطبية
Week 14	صفاتها مميزاته
Week 15	امتحان
Week 16	

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	الاصطلاحات العامة
Week 2	الاصطلاحات الخاصة بالأعضاء الخضرية
Week 3	الاصطلاحات الخاصة بالأعضاء التكاثرية
Week 4	كيفية الجمع
Week 5	كيفية التجفيف والكبس
Week 6	استعمال مفاتيح التشخيص
Week 7	**صفات ثنائية الفلقة**

Week 8	**صفاتها ومميزاتها**
Week 9	**تشخيص نباتات احادية الفلقة**
Week 10	**صفاتها ومميزاتها**
Week 11	**مميزات البيئة العراقية**
Week 12	**نماذج من تلك النباتات**
Week 13	**تشخيص النباتات الطبية**
Week 14	**المركبات الفعالة**
Week 15	**امتحان**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	The principles of plant physiology.	Yes
Recommended Texts	**Plant physiology.**	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	**جرائم حزب البعث**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UNI2308**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Samar abdullah		**e-mail**	samar.abdullah@mu.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	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 Aims أهداف المادة الدراسية	**1- تعريف الطالب بجرائم البعث المقبور والاسس الصحيحة لهما من اجل تشكيل وعي مناسب لهذا النظام السياسي المتطور** **2- دراسة مفهوم البعث من خلال معرفة اسسها واشكالها وعناصرها ومقوماتها مع دراسة اهم التجارب البعثية في دول العالم**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	-1ان يكون الطالب ملما بمعرفة اسس النظام البعثي - 2- أن يكون يمتلك الثقافة الجيدة للتمييز بين انواع حزب البعث 3- أن يمتلك معلومات جيدة حول الية عمل حزب البعث خلال تلك الفترة 4- ان يكون الطالب على اطلاع بحقوق الانسان وحرياته الاساسية
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	ب –الأهداف المهاراتية الخاصة بالمادة تقارير حول النظام البعثي الحاكم في ذلك الوقت -1 ب مناقشات اثناء المحاضرة حول النظام الديمقراطي -2ب ب – 3- شرح اهم حقوق الانسان التي ينبغي ان يتمتع بها

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	31	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	19	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	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	جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية 2005 - مفهوم الجرائم واقسامها
Week 2	جرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية عام 2005 - انواع الجرائم الدولية
Week 3	القرارات الصادرة من المحكمة الجنائية العليا
Week 4	الجرائم النفسية والاجتماعية – اليات الجرائم النفسية واثارها
Week 5	موقف نظام البعث من الدين
Week 6	انتهاكات القوانين العراقية - صور انتهاكات حقوق الانسان وجرائم السلطة

Week 7	امتحان **الشهر الاول**
Week 8	قرارات الانتهاكات السياسية والعسكرية لنظام البعث
Week 9	اماكن السجون والاحتجاز لنظام البعث
Week 10	الجرائم البيئية لنظام البعث في العراق
Week 11	التلوث الحربي والاشعاعي وانفجار الالغام
Week 12	تدمير المدن والقرى - تجفف الاهوار
Week 13	تجريف بساتين النخيل والاشجار والمزروعات
Week 14	جرائم المقابر الجماعية
Week 15	احداث مقابر الابادة الجماعية من نظام البعث في العراق
Week 16	التصنيف الزمني لمقابر الابادة الجماعية في العراق للمدة 1963 – 2003

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		
	Text	**Available in the Library?**
Required Texts	**كتاب جرائم نظام البعث في العراق – وزارة التعليم العالي والبحث العلمي – مقرر دراسي للجامعات الحكومية**	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

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	**Research Methods**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**SCI 2307**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Biology		**College**	Sciences	
Module Leader	Hana Kadum		**e-mail**	Hanakadum@mu.edu.iq	
Module Leader's Acad. Title	Assist. 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 Aims أهداف المادة الدراسية	1- لتطوير مهارات الطلبة في البحث العلمي 2- لفهم كيفية البحث عن الحلول للمشكلة العلمية. 3- يتناول هذا المقرر المفاهيم الأساسية للبحث العلمي. 4- لفهم كيفية البحث عن المصادر وطرق العمل وايجاد فرضيات البحث العلمي. 5- لفهم وتعلم كيفية تطبيق البحث العلمي والحصول على نتائج. 6- فهم كيفية اجراء التحليل الاحصائي للنتائج ومناقشتها علميا.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	أ- المعرفة والفهم: أن يصيغ الطالب خطة البحث تتماشى مع الأسلوب العلمي في مناهج البحث. ب- أن يسرد الطالب خطة البحث سردا منطقيا. ج- اكتساب مهارات كتابة البحث العلمي د- القدرة عن البحث واكتشاف المشاكل العلمية وكيفية معالجتها
Indicative Contents المحتويات الإرشادية	يتضمن المحتوى الأصلي ما يلي مقدمة عن البحث العلمي Scientific Research ، هو عبارة عن أسلوب مُمنهج في استقطاب المعلومات الموثوقة وجمعها من مصادرها وتسجيل ملاحظات عليها وتحليل هذه المعلومات موضوعيا بالاعتماد على مجموعة من الأساليب والمناهج العلمية ويكون ذلك بقصد التحقق من مصداقيتها، أو تعديلها، أو إضافة معلومات جديدة إليها ليتم التوصل إلى قوانين ونظريات جديدة أو التنبؤ بظواهر قد تحدث. مواصفات الباحث العلمي الجيد وأخلاقياته من الأمور المهمة في ميدان البحث العلمي، حيث إن البحث العلمي سلاح ذو حدين، ويمكن أن يستخدم في أغراض سلبية تؤدي إلى مخاطر جمة تدفع الأفراد والمجتمع للهلاك أهم مناهج البحث العلمي. مفهوم منهج البحث: عبارة عن مجموعة من الخطوات المنطقية المنظمة والطرق العملية التي تساعد في عملية البحث بطريقة صحيحة، تصنيف مناهج البحث العلمي يقصد بالتصنيف تقسيم الظاهرة إلى عدة فئات حسب أسس معينة، ولتعدد أسس لتصنيف نجد أن التصنيفات تتعدد في ظل عدم اتفاق بين المصنفين, ماهية مشكلة البحث صياغتها وشروطها: إن التطورات العالمية والتكنولوجية في جميع المجالات ما هو الا نتيجة خلاصة سهر وتعب وجهد الباحثين من بحث وفحص واختبار حول موضوع معين، وكم كان ذلك صعبا عليهم في ذلك الوقت وبعد سنوات من البحث أن يتوصل الباحث لضوء صغير في ظلمة الأفق يمكنه من الحصول على نتاج جهده ويتمكن من الوصول إلى بلورة المشكلة، مفهوم مقدمة البحث على أنّه كتابةٌ مفصّلةٌ في موضوعٍ معيّنٍ ومحددٍ، والذي يهدف إلى إبراز فكرةٍ أو مجموعة من الأفكار بشأن ذلك الموضوع، لهذا يلزم على الباحث أن يبرز موضوعه بأسلوبٍ مرتبةٍ بسلاسةٍ وتدرّج بالفكرة لكي يتيح الاحتمالية للقارئ من أجل استيعاب موضوع البحث. فرضيات البحث العلمي :Hypothesis اذا كان البحث العلمي ابداعا فان الموطن الحقيقي ل بداع يكمن في الفرض العلمي، فكل تلك الابداعات العلمية والنظريات والقوانين انما كانت في البداية مجرد فرضيات علمية، وتحتاج الفرضيات جهدا كبيرا من الباحث فهي تتطلب ان يوسع اطلا عه ومعارفه. ماهيّة خطّة البحث وأهمّيتها: يعتبر تصميم خطّة البحث الخطوة التالية التي تحظى بالأهمّية، وينبغي أن ينتقل إليها الباحث بعد تحديده لمشكلة البحث وصياغة فرضياته. وخطّة البحث عبارة عن تقرير، مبوّب ومنظّم، يعطي المشرف والقارئ فكرة واضحة عن الطريق الذي يريد الباحث سلوكه. التعريف بالعينات: يعتبر اختيار الباحث للعينة Sample من الخطوات والمراحل الهامة للبحث ، والباحث يفكر في عينة البحث منذ ان يبدأ في تحديد مشكلة البحث.

	تحليل البيانات: تعتبر عملية تحليل البيانات على أنها تنظيم وترتيب البيانات؛ وذلك من أجل إخراجها وإبرازها على شكل معلومات يتم استخدامها بهدف الإجابة على أسئلة معينة .

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	الإستراتيجية الرئيسية التي سيتم تبنيها في تقديم هذه الوحدة هي تشجيع الطلاب على المشاركة في التمارين ، مع تحسين مهارات التفكير النقدي وتوسيعها في نفس الوقت. سيتم تحقيق ذلك من خلال الفصول والبرامج التعليمية التفاعلية ومن خلال التفكير في نوع التجارب البسيطة التي تتضمن بعض أنشطة أخذ العينات التي تهم الطلاب.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	45	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	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	مقدمة عن البحث العلمي وخطوات البحث العلمي
Week 2	مواصفات الباحث العلمي الجيد وأخلاقياته
Week 3	أهم مناهج البحث العلمي
Week 4	المنهج الوصفي
Week 5	ماهية مشكلة البحث صياغتها وشروطها
Week 6	مقدمة البحث وأهميته أهداف البحث
Week 7	فرضيات البحث العلمي
Week 8	ماهيّة خطّة البحث وأهمّيتها
Week 9	التعريف بالعينات
Week 10	طرق اختيار العينة
Week 11	تحليل البيانات
Week 12	مناقشة النتائج
Week 13	الاستنتاجات
Week 14	التوصيات
Week 15	المصادر
Week 16	**Preparatory week before the final Exam**

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		
	Text	**Available in the Library?**
Required Texts	طرق ومناهج البحث العلمي	No
Recommended Texts	طرق البحث العلمي	No
Websites	https://www.noor-book.com/%D9%83%D8%AA%D8%A7%D8%A8-%	

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

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