Academic Program Description Form

University Name: University of Diyala
Faculty/Institute: College of Science
Scientific Department: Biology
Academic or Professional Program Name: BSc.
Assis. Prof Dr. Esam Hamid Hameed
Final Certificate Name: BSc. in Biology
Academic System: Bologna Process
Description Preparation Date: 5/9/2024
File Completion Date: 5/9/2024

Signature:
Head of Department Name:
Assis. Prof. Esam Hamid Hameed
Date: 10/9/2024

Signature:
Scientific Associate Name:
Prof. Dr. Munther Hamza Rathi
Date: 10/9/2024

The file is checked by:
Department of Quality Assurance and University Performance

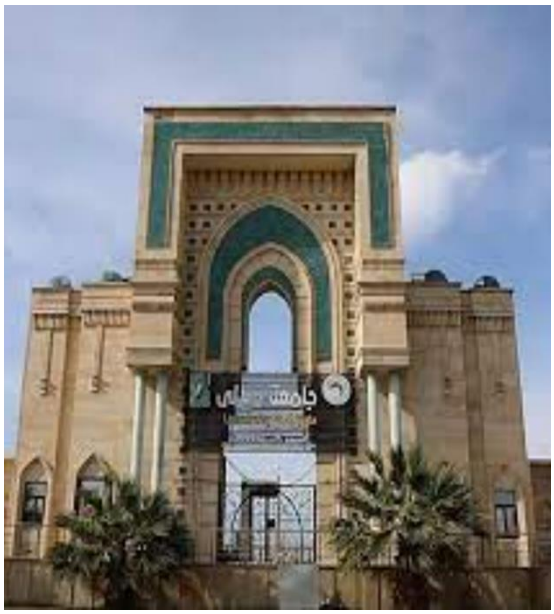
Director of the Quality Assurance and University Performance

Ghassan Sabeeh Mahmood

Approval of the Dean
Prof. Dr. Taha Mohammed Hasan

University of Diyala
جامعة ديالى

First Cycle – Bachelor's Degree (B.Sc.) – Biology
بكالوريوس - علوم حياة



September 2024

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1. Mission & Vision Statement

Vision Statement

Opportunities for high-level training are available for the students enrolled in the Department of Biology, to prepare them to enter the labor market after graduation to work in the medical laboratories, teaching in the secondary schools, and working in the agricultural enterprises, environmental affairs, water resources and other institutions that have relationships with biological sciences in one way or another. The combination of instructional methods leads students to a balanced understanding of the scientific methods used by biologists to make observations, develop insights and create theories about the living organisms that populate our planet. Small class sizes within the biology program foster a close working relationship between academic staff and students in an informal and nurturing atmosphere.

Mission Statement

The biology academic staff pursues a multifaceted charge at Diyala University. The Program seeks to provide all biology students with fundamental knowledge of biology, as well as a deeper understanding of a selected focus area within the biological sciences. The curriculum and advising have been designed to prepare graduates for their professional future, whether they choose to work as field biologists specializing in botany or wildlife, or to pursue advanced degrees in the life sciences or health sciences. The biology program also provides the necessary fundamental knowledge of the life sciences to suppofi the Nursing degree, the Environmental Studies degree, and the Associate of Science degree in Forest Technology. In addition, biology courses provide a key laboratory science experience for those students seeking to complete the general education requirements

2. Program Specification

Programme code:	BSc-Bio	**ECTS**	240
Duration:	4 levels, 8 Semesters	**Method of Attendance:**	Full Time

Biology means the study of life. It is an exciting, wonderful and rapidly developing subject. Biology play an important role in overcoming the global challenges from disease to environment of the earth. The programme puts a strong emphasis on research and academic skills training across all years. The BSc in Biology is designed to provide students with a solid foundation in fundamentals aspects of plant, animal, ecology, genetics and microbiology. The programme provide skills in laboratory and practical skills that are appropriate to the study of living organisms. The programme is also designed to provide students with a wide-ranging exposure to the theory and practice of the courses, as well as an education in its diverse applications in medicine, industry, and environment.

Biology graduates are qualified for many different types of careers. The breadth of biology studied will determine the opportunities available, but regardless of the path chosen, students will have acquired a broad variety of subject-specific and general abilities that are applicable to jobs in both the biological and non-biological domains.

To graduate, a student shall have undergone 8 semesters of study including summer practical training. Course workload must meet the graduation requirements of the University based on minimum academic standards. The student must earn a minimum of 240 ECTS for the four-year programme.

Level one is focusing on fundamental topics such as Zoology, Botany, Chemistry, Biophysics and Mathematics. Level two will cover a range of concepts including biological systems and the importance of biology in real life. The students will explore topics such as Biochemistry, Entomology, Microbiology, Parasitology, Plant Taxonomy and Anatomy allowing them to develop their interests at a higher level. During level three and four, the students will study in-depth courses provide them an opportunities to learn specialist topics such as biotechnology, molecular biology, pathogenic bacteria, medical virology, pollution, histology and immunology. In the fourth year, more emphasis is placed on student centred learning exercises, workshops, and seminars. Year 4 has a compulsory undertaking a research project/dissertation.

3. Program Objectives

1. A comprehensive study of biological sciences, their applications and uses in society theoretically, scientifically and applicability.
2. Preparation of scientific cadres to work in the fields of medicine and health, agricultural and food industries.
3. Providing the students with the necessary scientific techniques and how to deal with devices and equipments that can be used in theoretical and applied studies.
4. Providing the state institutions, private and mixed sectors (medical, industrial and laboratory institutions) with specialized cadres.
5. Investigate and study the new developments in the biological sciences and keep updated with the scientific developments in this field and incorporate that within the prescribed curriculum.
6. To prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry level jobs in any area of biology.

4. Student Learning Outcomes

Biology is the study of the organization and operation of life at the molecular, cellular, organism, and population levels. Graduates obtain information on the historical, technical and social aspects of biology and utilize basic knowledge toward realizing broader concepts. The Department offers a Bachelor of Science in Biology with a concentration in General Biology; Pre-medicine / Pre-dentistry; Biotechnology/Molecular Biology and a minor in Secondary Education that leads to a Public Instruction License. Additionally, the Department offers courses to a large number of students from other departments and supports pre-professional programs. The Biology curriculum and experiences are designed to prepare students, in part, for entry into professional health programs, graduate studies, technical careers and education.

1. Graduates will be able to illustrate the structure and function cellular components and explain how they interact in a living cell.
2. Graduates will be able to formally communicate the results of biological investigations using both oral and written communication skills.
3. Graduates will be able to perform laboratory experiments and field studies, by using scientific equipment and computer technology while observing appropriate safety protocols.
4. Graduates will be able to demonstrate a balanced including the historical development of foundational concept of how scientific knowledge develops, theories and laws and the nature of science.
5. Graduates will be able to demonstrate scientific quantitative skills, such as the ability to conduct simple data analyses.
6. Graduates will be able to use critical-thinking and problem-solving skills to develop a research project and/or paper.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

Diyala University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

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:				
Number 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.				

Calculation of the Cumulative Grade Point Average (CGPA):

The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:
CGPA = [(1st ^{m}odule score x ECTS) + (2nd ^{m}odule score x ECTS) + ……] / 240

7. Curriculum/Modules

Semester 1 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
Bio-1101	General Zoology	78	72	6.00	C	
Bio-1102	Analytical Chemistry	78	72	6.00	C	
Bio-1103	General Mathematics	60	65	5.00	B	
Bio-1104	Biophysics	77	90	6.00	B	
UNI-1105	Human Rights and Democracy	32	27	3.00	S	
UNI-1106	Arabic Language	62	37	4.00	S	

Semester 2 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
Bio-1201	General Botany	78	96	7.00	C	
Bio-1212	Organic Chemistry	78	96	7.00	C	Bio-1102
Bio-1213	Biostatistics	65	65	5.00	B	Bio-1103
Bio-1204	Safety and Biosecurity	48	27	3.00	S	
Sci-1205	Computer Science	62	36	4.00	B	
UNI-1206	English Language	62	37	4.00	S	

8. Contact

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Ministry of Higher Education and Scientific Research
University of Diyala
College of Science
Department of Biology

MODULE DESCRIPTION FORM
FIRST CYCLE
LEVEL ONE

وصف المقرر لمسار بولونيا
المستوى الاول
الدورة الاولى

2024/2025

Semester One

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	General Zoology			Module Delivery	
Module Type	Core			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	Bio-1101				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1		Semester of Delivery	1	
Administering Department	Department of Biology		College	College of Sciences	
Module Leader	Ragad Ibrahim Ahmed		e-mail	raghadibrahim@uodiyala.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	1/9/2024		Version Number	2	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Understand the difference between science and non-science. 2. Be familiar with the specialized vocabulary of zoology. 3. Understand the relationship between animal structure and function. 4. Know the structural and functional characteristics of major animal groups, and be familiar with current hypotheses concerning how they evolved.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Define general zoology. 2. Studying the relationship between zoology and other sciences 3. An introduction to basic concepts in biology through study of the major lineages of invertebrate and vertebrate animals, with emphasis on the structure, and function of organ systems in an evolutionary context 4. Topics covered will include basic cell structure and function, development, systematics, and evolution . 5. Studying the classification or taxonomy of zoology. 6. The laboratory will focus on observation of structural-functional relationships of living and preserved representatives of the major animal phyla.
Indicative Contents المحتويات الإرشادية	**Cognitive goals:** 1. At the first level, knowledge development is to develop the student's ability to recall what he learned from zoology.

	2. The second level: improving comprehension, developing the ability to interpret. 3. Developing application capabilities in detecting classification of zoology 4. The fourth level: giving the student the ability to analyze 5. The fifth level is to develop the student's ability to integrate ideas (synthesis). 6. The sixth level of evaluation is to give a judgment on the value of the material. b- Marathi goals: To improve the student's ability to observe, to learn imitation and simulation, to learn the method of experimentation. B - The soft skills objectives of the course. B1 - knowledge skills – remembering. B2 - Memory and analysis skills. B3 - Use and development skills.

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	1. Lecture method, use of the interactive whiteboard, presentation, and use of explanatory films - explanation and clarification 2. Asking students a set of questions about animal classification, phylum, family, order, and class during the lectures, such as what, how, when and why for specific topics.

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

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

Semester One

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	INTRODUCTION : define of general zoology and its relationship with other sciences
Week 2	Characteristics of living things
Week 3	Prokaryotic and eukaryotic cells
Week 4	Cell cycle, Mitosis
Week 5	Animal cells and animal tissues
Week 6	Taxonomy and Classification of Animals
Week 7	Mid-term Exam
Week 8	Animal Phyla,1. The Protozoa
Week 9	2. The Parazoa
Week 10	3. The Radiata
Week 11	4. The Acoelomates
Week 12	5. The Pseudocoelomates
Week 13	6. The Coelomates: Protostomes
Week 14	7. The Coelomates: Deuterostome
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1 : Light Microscope
Week 2	Lab 2: Animal cell : Animal cell structure
Week 3	Lab 3: Animal Cell: Animal Cell shape.
Week 4	Lab 4: Animal cell :Living Components and Non-living Components in animal cell
Week 5	Lab 5: Cell Division
Week 6	Lab 6: Animal Tissues :Epithelial tissue
Week 7	Lab 7: Animal Tissues :Connective tissue
Week 8	Lab 8: Animal Tissues :Muscle tissue
Week 9	Lab 9: Animal Tissues :Nervous tissue
Week 10	Lab 10: Classification :Scientific Name and Common Name
Week 11	Lab 11: Classification The Groups of Animal Kingdom (1)
Week 12	Lab 12: Classification The Groups of Animal Kingdom (2)
Week 13	Lab 13: Classification The Groups of Animal Kingdom (3)

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Huxley, T. H. (2022). On the study of zoology. DigiCat. Nicholson, H. A. (2022). A manual of zoology. BoD–Books on Demand.	Yes
Recommended Texts	Honegger, T. (2022). Zoology.	No
Websites	https://alison.com/tag/biology https://www.brianbrookshire.com/online-biology-curriculum/	

Grading Scheme

Semester One

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	Analytical Chemistry			Module Delivery	
Module Type	Core			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☒ Seminar	
Module Code	Bio-1102				
ECTS Credits	6				
SWL (hr/sem)	150				
Module Level	1		Semester of Delivery	1	
Administering Department	Department of Biology		College	Type College Code	
Module Leader			e-mail		
Module Leader's Acad. Title	Lecturer		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	1/9/2024		Version Number	2	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The primary objective of this course is to acquire basic concepts, principles, and techniques of modern analytical chemistry that would empower students with an analytical mind set and the abilities to solve diverse analytical problems in an efficient and quantitative way that conveys the importance of accuracy and precision of the analytical results. On successful completion of this course, students will be able: 1. to develop an understanding of the range and uses of analytical methods in chemistry. 2. to establish an appreciation of the role of chemistry in quantitative analysis 3. to develop an understanding of the broad role of the chemist in measurement and problem solving for analytical tasks. 4. to provide an understanding of chemical methods employed for elemental and compound analysis. 5. to provide experience in some scientific methods employed in analytical chemistry.

	6. to develop some understanding of the professional and safety responsibilities residing in working on chemical analysis.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	▪ explain the fundamentals of analytical chemistry and steps of a characteristic analysis. ▪ analyze titration curves for complex acid / base systems. ▪ define titration curves for precipitation and complex formation titrimetry. ▪ solve the electrochemical analyses problems. ▪ calculate standard electrode potentials.
Indicative Contents المحتويات الإرشادية	his section introduces student to basic principles and practices in Analytical Chemistry. Itcovers functions and responsibilities of Analytical Chemists, analytical chemistry problemsand their solutions in general. It also covers uses and application of the course in general. Learning unit 2 : Laboratory Practice and Safety (5 periods) This section introduces student to good laboratory practices, maintenance of laboratory safetyand health standards. It also cover use of various laboratory apparatus and their calibration. Alarge portion of this unit is practical and students are expected to put in practice what theylearn in class on their laboratory daily routine work.Learning unit 3: Titrimetric methods of analysis (14 periods)This section introduces student to basic nomenclature and tritrimetric methods of analysis.The focus for this section is on acid-base reactions only. Students will also be introduced tovarious concentration units and how these units can be used in titrimetry. It will also inductstudents on hands on practical work as they apply theoretical knowledge in the laboratorysessions. Learning unit 4: Gravimetric methods of analysis (14 periods)This section introduces student to general principles of gravimtery. The focus for this sectionis on formation of different types of precipitates, processes involved in precipitationformation. It also covers post-treatment techniques of both inorganic and organic precipitatesin order to obtain analytical data. It also covers application of gravimetric technique inchemical analysis. Learning unit 5: Sampling and sample preparation (8 periods)This section of the course introduces students the concept of sampling and various samplingtechniques. It discusses various types of samples and how they are prepared for analysis. Itcovers various sample preparation methods and the nature of materials used for both organicand inorganic samples.

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

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**

Semester One

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
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Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to analytical chemistry
Week 2	Solutions and classification of solutions
Week 3	Express concentrations of solutions
Week 4	Density and specific gravity of solution
Week 5	The relationship between molarity or normality with percentage concentration
Week 6	Diluting solutions
Week 7	Solve of some Problems
Week 8	Concentration by percent
Week 9	P -functions
Week 10	Volumetric analysis
Week 11	Standard solution
Week 12	Acid –Base equilibrium
Week 13	Buffer solution
Week 14	Enthalpy
Week 15	Type of enthalpy
Week 16	Energy of bonds

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered

Semester One

Week 1	Lab safety
Week 2	Laboratory equipment
Week 3	Laboratory techniques: distillation, filtration, centrifugation
Week 4	Vaporization, chromatography, decantation
Week 5	Pipets and pipet pumps,
Week 6	Volumetric analysis (titration)
Week 7	Methods expressing concentration of solutions and calculations of volumetric analysis
Week 8	Preparation of (0.1 N) NaoH solution and standardization with (0.1 N) HCL
Week 9	Preparation of (0.1 N) HCL solution and standardization with sodium carbonate
Week 10	Determination of carbonate and bicarbonate in mixture
Week 11	Determination acidity of Vinegar
Week 12	Determination of hardness of water
Week 13	Preparation and standardization of (0.1 N) AgNO3 solution
Week 14	Determination of chloride according to modified Volhard method
Week 15	Complex formation reactions

Learning and Teaching Resources **مصادر التعلم والتدريس**		
	Text	Available in the Library?
Required Texts	Alam, M., Akhtar, M., & Asif, H. (2012). Textbook of Practical Analytical Chemistry-E-Book. Elsevier Health Sciences. Christian, G. D., Dasgupta, P. K., & Schug, K. A. (2013). Analytical chemistry. John Wiley & Sons.	Yes
Recommended Texts	Hussain, M. (2023). CHEM 221-001: Analytical Methods.	No
Websites	https://edu.rsc.org/teacher-pd/in-person/analytical-chemistry/classroom-resources	

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.

Semester One

Module Information معلومات المادة الدراسية					
Module Title	General Mathematics			Module Delivery	
Module Type	Basic			☒ Theory ☒ Lecture ☐ Lab ☒ Tutorial ☐ Practical ☐ Seminar	
Module Code	Bio-1103				
ECTS Credits	5				
SWL (hr/sem)	125				
Module Level	1		Semester of Delivery	1	
Administering Department	Dept. of Biology		College	College of Science	
Module Leader	Dr. Anwar Nouruddin Imran		e-mail	anwarmath@uodiyala.edu.iq	
Module Leader's Acad. Title	Assistant Professor		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	1/9/2024		Version Number	2	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The aim of the General Mathematics course is to prepare students for tertiary study in a variety of areas where an ability to critically analyse information and work with data is inherent. Students with tertiary pathways into areas such as Health, Science, Psychology and Commerce would benefit from studying this course.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After successfully completing this subject students should be able to: 1. Have knowledge of content and understanding of mathematical concepts and relationships. 2. Use mathematical algorithms and techniques (implemented electronically where appropriate) to find solutions to routine and complex questions. 3. Apply knowledge and skills to answer questions in applied and theoretical contexts. 4. Apply mathematical models to data in order to make predictions. 5. Develop solutions to mathematical problems set in applied and theoretical contexts. 6. Interpret mathematical results in the context of the problem. 7. Understand the reasonableness and possible limitations of the interpreted results, and recognise any assumptions made. 8. Develop and test conjectures. 9. Communicate mathematical ideas and reasoning to develop logical arguments. 10. Use appropriate mathematical notation, representations, and terminology.

Indicative Contents المحتويات الإرشادية	1. Improving the student's ability to observe 2. To learn how to imitate and imitate: Imitation 3. To learn the method of experimentation

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	Conducting fun scientific competitions (individual or team). Organizing lectures prepared by students. Formation of volunteer work groups. Scientific trips.

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	65	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.3
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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	0	10% (10)	Continuous	All
	Report	2	10% (10)	13	LO #5, #8 and #10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) **المنهاج الاسبوعي النظري**	
	Material Covered
1	lows of derivative
2	higher derivative and Implicit deferential
3	chain Rule
4	derivative of triangle function
5	derivative of hyperbolic function and derivative of invers
6	derivative of inverse hyperbolic function
7	derivative of logarithms and exponential

8	lows of Integral
9	the integration of triangle function
10	the integration of invers triangle function
11	the integration of hyperbolic function
12	the integration of invers hyperbolic function
13	the integration of logarithms and exponential function
14	The methods of integration
15	tabular integration, Trigonometric integration, Trigonometric substation

Learning and Teaching Resources **مصادر التعلم والتدريس**		
	Text	Available in the Library?
Required Texts	1. ‘‘Discrete Mathematics and Its Applications’’ by Kenneth H. Rosen, 2007. 2. ‘‘Discrete Mathematics Demystified’’ by Steven G. Krantz, 2009. 3. ‘‘Fundamental Concepts of Modern Mathematics’’ by Max D. Larsen.	Yes
Recommended Texts	4. ‘‘Discrete Mathematics- Schaum's Outline’’ by S. Lipschutz and M. Lipson, 2007.	No
Websites	https://www.syriamath.net/library	

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 Information معلومات المادة الدراسية					
Module Title	**Biophysics**			Module Delivery	
Module Type	**Basic**			☒ Theory ☒ Lecture ☒ Lab ☐ Tutorial ☐ Practical ☐ Seminar	
Module Code	**Bio-1104**				
ECTS Credits	**6**				
SWL (hr/sem)	**167**				
Module Level	1		Semester of Delivery	1	
Administering Department	Type Dept. Code		College	Type College Code	
Module Leader	Amera Kanan		e-mail	amera@uodiyala.edu.iq	
Module Leader's Acad. Title	Lecturer		Module Leader's Qualification	M Sc.	
Module Tutor	Name (if available)		e-mail	E-mail	
Peer Reviewer Name	Name		e-mail	E-mail	
Scientific Committee Approval Date	1/9/2024		Version Number	2	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	In this module we will review in detail several important modern physical science concepts, models, laws, tools and techniques that can be applied to addressing real biological questions, with a thorough discussion of the underlying physics. Physical science methods historically have been key to providing enormous breakthroughs in our understanding of fundamental biology - stemming from the early development of optical microscopy in understanding the cellular nature of life, through to complex structural biology techniques to elucidate the shape of vital biomolecules including proteins and DNA. In the first half of this module we will introduce the key biological macromolecules, the forces that are involved in maintaining their structure and how structure is determined. We will next discuss key physical science developments that have involved methods to study single cells in their native context, single- molecule biophysical methods that permit dynamic and mechanistic information to be extracted with unprecedented precision, and ground-breaking developments in areas of super-resolution imaging and biosensing. In the second half of the module we will discuss tools and techniques that, broadly, permit the detection and characterization of biological material using

	non-visible electromagnetic radiation, and methods used to manipulate and quantify biological forces, with particular emphasis throughout placed on real applications. Examples of such tools discussed include electron microscopy, nuclear magnetic resonance spectroscopy and atomic force microscopy.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	The module will focus on a number of concepts, models, laws, tools and techniques of physical science that underpin biophysical methods. It will address a broad range of challenging biological questions. During this module students will: 1. Comprehend the use of physical concepts and laws to produce models of biological systems, and quantitatively analyse these models. 2. Critically analyse the validity of assumptions made in these models and assess their impact on the validity of the results. 3. Understand the physical basis of experimental techniques used to study the biological systems introduced and explain the key results. 4. Assess the key features and biological significance of the systems introduced. 5. Demonstrate an understanding of the key physical principles behind several important biological processes underpinning living matter. 6. Apply modern biophysical tools and techniques to real applications
Indicative Contents المحتويات الإرشادية	The lecture course will discuss the scope of modern biophysics, and introduce students to the fundamentals of chemical bonding, and the structure and function of biological molecules including sugars, lipids, proteins, nucleic acids and molecular machines. Biophysical techniques including optical spectroscopy, dynamic light scattering, fluorescence spectroscopy and the basics of light microscopy will then be discussed in detail. Insights into single-molecule imaging and spectroscopy will then be provided, before a series of lectures on super-resolution approaches. Next, students will encounter techniques which use non-optical waves in their mode of operation, including electron microscopy, X-ray spectroscopy and nuclear magnetic resonance spectroscopy. Experimental techniques which rely on forces, including atomic force microscopy and optical tweezers will then be discussed in detail. Complementary and emerging experimental techniques will also be presented, as well as detailed analysis of molecular dynamics simulations. The lecture course will also include revision of the course material and guest research lectures from specialists in the field. Examples of guest research lectures include, but are not limited to: Digital Holographic Microscopy, Biofilms, Biophotonics and Raman Spectroscopy.

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

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem)	77	Structured SWL (h/w)	5

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	90	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	The lecture course will discuss the scope of modern biophysics, and introduce students to the fundamentals of chemical bonding
Week 2	The structure and function of biological molecules including sugars, lipids, proteins, nucleic acids and molecular machines.
Week 3	Biophysical techniques including optical spectroscopy, dynamic light scattering
Week 4	Fluorescence spectroscopy and the basics of light microscopy will then be discussed in detail.
Week 5	properties of fluids: pressure, buoyancy, Archimedes' rule, ideal fluid flow , Bernoulli equation, Venturi tube,
Week 6	Medical needles, Pitot tube
Week 7	real fluid viscosity and flow, Viscosity modulus, viscosity changes with degree Heat, Brazier's law,
Week 8	flow rate the blood and its relationship with pressure slope, velocity sedimentation
Week 9	fluid properties: fluid diffusion, Vic's Fluid Law, Maturity, Laws Maturity, boiling point of solutions
Week 10	fluid properties: surface tensile, Surface tensile modulus, some live applications
Week 11	Vibratory motion, force constant, motion Simple harmonic, potential energy and kinematics in simple harmonic motion
Week 12	fading or fading, resonance
Week 13	wave motion, sine wave equation, wave velocity in elastic media, sedentary pats, strikes,
Week 14	ear and hearing distress, hearing mechanism, Pitch and loudness, optics
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Ohm's Law
Week 2	Lab 2: Balance of power
Week 3	Lab 3: Finding the ground acceleration using a simple pendulum
Week 4	Lab 4: Find the melting point of the wax from its cooling curve
Week 5	Lab 5: Determination of the specific heat of a poor conductor of heat (elastic)
Week 6	Lab 6: Find the density of a liquid
Week 7	Lab 7: Boyle's Law investigation
Week 8	Lab 8: Joule equivalent
Week 9	Lab 9: Finding the relationship between the current passing through the tungsten thread and the potential difference between its two ends
Week 10	Lab 10: Determination of the specific heat of graphite
Week 11	Lab 11: Study of the relationship between temperature and electromotive force of a
Week 12	Lab 12: Resistance changes with temperature
Week 13	Lab 13: Set the flame temperature
Week 14	Lab 14: Determination of the coefficient of thermal conductivity of a rubber tube
Week 15	Lab 15: The coefficient of volumetric expansion of liquids

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Leake MC: Biophysics: tools and techniques (CRC Press, 1st Ed, 2016) Leake MC: Single-Molecule Cellular Biophysics (CUP, 1st Ed, 2013)	No
Recommended Texts	Alberts A et al: Molecular Biology of the Cell (Garland Science, 6th Ed, 2014).	No
Websites	https://www.coursera.org/browse/physical-science/	

Grading Scheme مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
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MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Human Rights and Democracy**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **L Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UD04**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level			**Semester of Delivery**		
Administering Department	جميع اقسام الكلية		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title	لجنة حقوق الانسان والديمقراطية		**Module Leader's Qualification**	MSc.	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. يتعلم الطالب خلال السنه الدراسية اساسيات حقوق الانسان والديمقراطية ما حقوقه كيف يدافع عنها بالطرق القانونية وماهي ضماناتها الداخلية والدولية. 2. استحصال المعرفة في مجال الديمقراطية وأنواع أنظمتها واثرها على حقوق الانسان . 3. تنمية شخصية الطالب وتعزيز وعيهم في الأنظمة السياسية الديمقراطية وتفاصيلها وكيفية تطبيقها على ارض الواقع واهمية ان يكون فعال في المجتمع من خلال احترامه لحقوق الاخرين ومعرفه ان الحقوق والحريات تنتهي عند بداية حقوقهم وحرياتهم ويؤدي واجباته بدلا من اكتساب الحقوق فقط. 4. تعزيز ثقافة السلام القائمة على العدل والمساواة.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. تمكين الطالب من معرفة اساسيات الدفاع عن حقوقه وحقوق الاخرين بعد معرفتها ومعرفة أهميتها له وللمجتمع بصورة عامة وأيضا معرفه كل شخص حدود حقوقه وحريته . 2. تمكين الطالب في المشاركة السياسية وذلك من خلال معرفته بأهمية مشاركته في الانتخابات وتأثير هذه المشاركة على سير الانتخابات وتشكيل السلطة فيما بعد. 3. معرفة الطالب ضمانات حقوقه وحرياته وماهي مصادرها. 4. معرفة الفرق بين الحقوق والحريات. 5. تمكين الطالب من معرفة ماهي المفهوم العلمي للديمقراطية وماهي جذورها وانواعها واشكالها. 6. يتعلم الطالب كيف يؤثر النظام الديمقراطي على حقوق الانسان وماهي العلاقة بينها. 7. ادراك الطالب ضرورة ان يكون مواطن فعال في المجتمع ايضاً معرفه شروط الناخب وشروط المرشح للانتخابات. 8. معرفة أنظمة الانتخابات وايهما افضل. 9. فهم الطالب للقانون الدولي لحقوق الانسان وايضاً معرفة مختصرة عن المنظمات الدولية والية عملها

	كالأمم المتحدة ومنظمة الصليب الأحمر وغيرها.
Indicative Contents المحتويات الإرشادية	**الجزء الأول - تعريف حقوق الانسان وحقوق الانسان في الحضارات القديمة** (تعريف الحق وتعريف الانسان ومعرفة أهمية حقوق الانسان بالنسبة للإنسان والمجتمع أيضا دراسة حقوق الانسان في الحضارات كالحضارة المصرية والعراقية واليونانية والرومانية) (٤ساعات) **الجزء الثاني معرف حقوق الانسان في الأديان السماوية واهمها الإسلام (٢ساعة)** مصادر حقوق الانسان تتضمن (مصادر دولية كالإعلان العالمي لحقوق الانسان والعهدان الدوليان والمصادر الإقليمية التي تشمل الاتفاقيات الإقليمية كالاتفاقية الاوربية والأمريكية والدستور)(٢ساعة) ضمانات حقوق الانسان (كالضمانات الدستورية والقانونية)(٢ساعة) الاتفاقيات الدولية والإقليمية لحقوق الانسان (٢ساعة) الحريات العامة وانواعها والمقارنة فيما بينها (٢ساعة) مستقبل حقوق الانسان والعولمة وحقوق الانسان (٢ساعة) تعريف وتاريخ وأنواع الديمقراطية (دراسة تعريف ونشأة وتطور الديمقراطية مبادئها وانواعها كالديمقراطية المباشرة وغير المباشرة والنظام الرئاسي والبرلماني) (٦ساعات) تعريف الانتخاب وشروطه وأنواع النظم الانتخابية وتعريف المجلس النيابي (٦ساعات) العلاقة بين الديمقراطية وحقوق الانسان (٢ساعة)

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1. زيادة وعي الطالب بأهمية معرفه حقوقه وواجباته اتجاه المجتمع وعلاقة حقوق الانسان بالنظام الديمقراطي 2. ثقافة عامة في مجموعة من المجالات ومنها المجال القانوني و السياسي والاجتماعي ورفع ثقة الطالب بنفسه من خلال ربط المادة النظرية بالواقع العملي

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**33**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**2**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**17**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**1.1**
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**	**15% (10)**	**5 and 10**	**LO #1, #2 #,3,and #6 #7#8**
	Assignments	**2**	**10% (10)**	**2 and 12**	**LO #3, #4 and #6, #7**
	Projects / Lab.				
	Report	**1**	**15% (10)**	**13**	**LO #5, #8 and #9**
Summative assessment	**Midterm Exam**	**2hr**	**10% (10)**	**7**	**LO #1 - #7**
	Final Exam	**3hr**	**50% (50)**	**16**	**All**
Total assessment			**100% (100 Marks)**		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	محاضرة تعريفية عن المادة واهميتها ..
Week 2	تعريف الحق والانسان وحقوق الانسان واهمية حقوق الانسان ,حقوق الانسان في الدين الإسلامي والحضارات القديمة.
Week 3	مصادر حقوق الانسان الدولية والإقليمية والمحلية.
Week 4	ضمانات حقوق الانسان الدستورية والقانونية وضمانات حقوق الانسان على الصعيد الدولي.
Week5	ضمانات حقوق الانسان في الإسلام
Week 6	دور المنضمات الإقليمية في حماية حقوق الانسان.
Week 7	خصائص حقوق الانسان وتعريف الحريات العامة وانواعه والمقارنة بينها وبين الحقوق القانون الدولي لحقوق الانسان والقانون الدولي الإنساني ومنظمة الصليب الأحمر.
Week 8	مستقبل حقوق الانسان وسبل تطويرها .
Week 9	العولمة وحقوق الانسان .
Week 10	تعريف الديمقراطية وتطورها التاريخي ومبادئها . الديمقراطية بين العالمية والخصوصية . اشكال الديمقراطية / الديمقراطية المباشرة.
Week 11	الديمقراطية شبه المباشرة والديمقراطية التمثيلية / اركان النظام التمثيلي / اشكال النظام التمثيلي.
Week 12	المجلس النيابي وانواعه / الانتخاب وشروطه / هيئة الناخبين.
Week 13	تنظيم عملية الانتخاب / تحديد الدوائر الانتخابية / القوائم الانتخابية / المرشحون/ الحملة الانتخابية / التصويت .
Week 14	نظم الانتخابات.
Week 15	علاقة الديمقراطية بحقوق الانسان وكيفية التأثير والتأثر فيما بينها.
Week 16	الامتحان النهائي

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	حقوق الانسان والطفل والديمقراطية /تأليف ماهر صالح علاوي ورياض عزيز هادي وعلي عبد الرزاق محمد واخرون / العاتك / بيروت / ٢٠٠٩	نعم
Recommended Texts	عباس الدليمي / حقوق الانسان الفكر والممارسة فخري رشيد ،صلاح ياسين /المنظمات الدولية / العاتك لصناعة الكتاب / بغداد عصام العطية / القانون الدولي العام / المكتبة القانونية /بغداد/2012	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	**Arabic Language**			**Module Delivery**	
Module Type	**Support**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UD02**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Othman Khlan Farhan		**e-mail**	othaman@uodiyala.edu.iq	
Module Leader's Acad. Title	Lecturer		**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	1/9/2024		**Version Number**	2	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- تعريف الطلبة اهم المفاتيح الأساس في التعامل بلغة عربية فصيحة خالية من اي خطأ أو لحنٍ وكيفية التعلم فيما يخص الأدب والنحو والبلاغة والاملاء العربية وكل هذا لغير الاختصاص. 2- رفع القدرات التعبيرية للطالب، وزيادة ثروتهم اللغوية ، ومساعدتهم على استخدام العبارة المناسبة بشكل دلالي واضح. 3-تدريب الطلبة على التحدث، والتنظيم المنطقي للأفكار، مع الحرص على التمسك باللغة العربية الفصحى . 4- رفع الأداء اللغوي العام لدى الطلبة. 5- تمكين الطلبة من الكتابة والتعبير والحديث بلغة عربية فصيحة وواضحة. 6- مساعدة الطلبة في التعبير عن افكارهم من خلال المناقشة والحوار بلغة سهلة وفصيحة . 7- جعل الطلبة قادرين على اكتساب خزين لغوي من الكلمات واللفاظ والتعابير الفصيحة. 8- تعلم الطلبة الحفاظ على لغة القرآن التراث العربي الاصيل.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	الاهداف المعرفية والمهارية: 1- يعرف اساليب اللغة العربية. 2- يوظف ادوات الترقيم عند الكتابة . 3- يتدرب على كيفية تحليل النصوص الادبية . 4- يعرب بعض الامثلة والتمارين عن الجملة الاسمية والفعلية . 5-يناقش بعض النصوص القرآنية والادبية . 6- يبين الفرق بين علامات الاعراب الاصلية والفرعية. 7- يميز بين الافعال والاسماء في الجمل. 8– يتدرب على القراءة الواضحة والإلقاء . 9- يتدرب على الكتابة بخط حسن من خلال التعريف بأنواع الخطوط العربية، وكتابة كل حرف، ثم

	كتاب الجمل والعبارات بخط الرقعة. 10- يميز بين حمزة القطع وهمزة الوصل عند الكتابة . 11- يميز بين حرفي الضاد والظاء في الكتابة والنطق. 12- يميز بين التاء المربوطة والمفتوحة اثناء الكتابة. 13- أحكام كتابة الضاد والظاء.
Indicative Contents المحتويات الإرشادية	توضيح أهمية اللغة العربية وفوائدها بالنسبة للطالب الجامعي (2 ساعة). اللغة، تفسير وتحليل أول عشرة آيات من سورة الكهف مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية . (2 ساعة) اللغة، تفسير وتحليل ثلاثة آيات من سورة الحجرات مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية. (2 ساعة) الادب، تحليل ثلاثة عشر سطراً من قصيدة سفر ايوب في الشعر الحر للشاعر العراقي بدر شاكر السياب مع حياة الشاعر واهم الاوجه البلاغية والنحوية في القصيدة. (2 ساعة) الادب، تحليل ثمانية ابيات في الحماس للشاعر ابي الطيب المتنبي مع حياة الشاعر مع اهم الاوجه البلاغية والنحوية في القصيدة. (2 ساعة) قواعد اللغة العربية وأهميتها معرفة اقسام الكلام(الاسم والفعل والحرف)واهم علاماتها. قواعد اللغة العربية :- النكرة والمعرفة، انواع المعارف(العلم) شرح موضوع (اسم العلم والاسم المركب) مع الأمثلة. (2 ساعة) قواعد اللغة العربية، (الضمائر)شرح موضوع(ضمائر الرفع والنصب والجر) مع الامثلة. (2 ساعة) اللغة، حفظ وتفسير وتحليل سورة الاعلى مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية. الادب، تحليل ثمانية ابيات من قصيدة (كن بلسما) للشاعر (ايليا ابي ماضي)مع حياة الشاعر مع اهم الحالات الاعرابية والبلاغية .(2 ساعة) قواعد اللغة العربية، شرح موضوع (اسماء الاشارة) مع الأمثلة وحالات الاعراب، شرح موضوع (المعرف بالإضافة) مع الأمثلة وحالات الاعراب. (2 ساعة) قواعد اللغة العربية، شرح موضوع (الحال)معرفة الحال وصاحبها وما هي انواع الحال مع الأمثلة وحالات الاعراب. (2 ساعة) الأملاء في اللغة العربية، علامات الترقيم واهميتها في اللغة العربية. (2 ساعة) قواعد اللغة العربية، شرح موضوع (العدد)معرفة تميز العدد وماهي اقسام العدد مع الأمثلة وحالات الاعراب.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- المحاضرة والمشاركة. - المناقشة والحوار. - العصف الذهني. - كتابة التقارير عن الموضوع. - السؤال والجواب .

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	30	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	7
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**60**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	20% (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	توضيح أهمية اللغة العربية وفوائدها بالنسبة للطالب الجامعي. اللغة، تفسير وتحليل أول عشرة آيات من سورة الكهف مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية
Week 2	اللغة، تفسير وتحليل ثلاثة آيات من سورة الحجرات مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية.
Week 3	الادب، تحليل ثلاثة عشر سطراً من قصيدة سفر ايوب في الشعر الحر للشاعر العراقي بدر شاكر السياب مع حياة الشاعر واهم الاوجه البلاغية والنحوية في القصيدة.
Week 4	الادب، تحليل ثمانية ابيات في الحماس للشاعر ابي الطيب المتنبي مع حياة الشاعر مع اهم الاوجه البلاغية والنحوية في القصيدة.
Week 5	قواعد اللغة العربية وأهميتها معرفة اقسام الكلام(الاسم والفعل والحرف)واهم علاماتها.
Week 6	قواعد اللغة العربية :- النكرة والمعرفة، انواع المعارف(العلم) شرح موضوع (اسم العلم والاسم المركب) مع الأمثلة.
Week 7	قواعد اللغة العربية، (الضمائر)شرح موضوع(ضمائر الرفع والنصب والجر) مع الامثلة.
Week 8	اللغة، تفسير وتحليل سورة الاعلى مع بيان فضل السور ة وسبب تسميتها واهم الاوجه البلاغية والنحوية.
Week 9	الادب، تحليل ثمانية ابيات من قصيدة (كن بلسما) للشاعر (ايليا ابي ماضي)مع حياة الشاعر مع اهم الحالات الاعرابية والبلاغية.
Week 10	قواعد اللغة العربية، شرح موضوع (اسماء الاشارة) مع الأمثلة وحالات الاعراب، شرح موضوع (المعرف بالإضافة) مع الأمثلة وحالات الاعراب.
Week 11	قواعد اللغة العربية، شرح موضوع (الحال)معرفة الحال وصاحبها وما هي انواع الحال مع الأمثلة وحالات الاعراب.
Week 12	الأملاء في اللغة العربية، علامات الترقيم واهميتها في اللغة العربية.
Week 13	قواعد اللغة العربية، شرح موضوع (العدد)معرفة تميز العدد وماهي اقسام العدد مع الأمثلة وحالات الاعراب.
Week 14	الأملاء في اللغة العربية، احكام الهمزة(حمزة الوصل، حمزة القطع، كتابة الهمزة في وسط الكلمة).
Week 15	الأملاء في اللغة العربية: احكام كتابة التاء المربوطة والمفتوحة والالف الممدودة والمقصورة.

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

Semester One

	Text	Available in the Library?
Required Texts	1. القرآن الكريم. 2. كتاب البلاغة والتطبيق. 3. كتاب الأملاء الواضح . 4. منهاج اللغة العربية لغير الاختصاص. 5. قواعد الإملاء الصحيحة لعبد السلام محمد هارون	Yes
Recommended Texts	1. كتاب شرح ابن عقيل على الفية ابن مالك/ ابن عقيل عبد الله بن عبد الرحمن. 2. كتاب الميسر في اللغة العربية لغير الاختصاص/ الدكتور زياد طارق شولي 3. منهاج اللغة العربية العامة لغير الاختصاص/ عبد القادر حسن امين 4. معاني النحو للدكتور فاضل السامرائي 5. إعراب القرآن وتفسيره وبيانه لمحمود الدرويش	Yes
Websites	1- http://www.al-mostafa.com/index.htm 2- http://www.almeshkat.net/books/index.php 3- http://www.imamu.edu.sa/arabiyah	

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.

Semester Two

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**General Botany**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-1201**				
ECTS Credits	**7**				
SWL (hr/sem)	**174**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Khalid Dheyaa Abdulwahid		**e-mail**	chechanikd75@uodiyala.edu.iq	
Module Leader's Acad. Title	Assis. Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Khalid Dheyaa Abdulwahid		**e-mail**	chechanikd75@uodiyala.edu.iq	
Peer Reviewer Name	Khalid Dheyaa Abdulwahid		**e-mail**	chechanikd75@uodiyala.edu.iq	
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	Bio-2312	**Semester**	3

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	5. Learn about plants in nature and how they are classified and developed. 6. Identify the plant cell and its various components. 7. Identify plant tissues and their functions. 8. Identify the different parts of the plant. 9. Studying photosynthesis in plants. 10. Granting the student a bachelor's degree in the theoretical and practical aspects.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	7. Identify the science of Botany and learn about origin, development, and systematics, classification of plants as well as In addition to the location of the plant kingdom within the pyramid of life. 8. Learn about the differences photosynthetic organisms (plants1) and Vegetabilia kingdom (plants2), as well as fully parasitic plants. 9. Clarification the Cell theory and learn about Light, TEM, SEM microscopy and identification of the parts and organelles of plant cell. 10. Distinguish between eukaryotic and prokaryotic plants and identify the parts of the nucleus in a plant cell. As well as discussing the plant life cycle and the mechanisms of cell division in plant cells. 11. Distinguishing the important differences between mitochondria and

	plastids, in addition to knowing a brief about their development from an evolutionary point of view. 12. A detailed explanation of plant tissues, their types, locations in the plant and their functions. 13. Identify the organs of plant and studied anatomically. 14. Explain the process of photosynthesis in plants.

Indicative Contents
المحتويات الإرشادية
	Indicative content includes the following.
	
	A. Cognitive goals
	A1-The first level // Knowledge development // Develop the student's ability to recall what he learned about scientific facts related to Botany and enable students to obtain knowledge and understanding of the intellectual and applied framework in the science of Botany.
	A2-The second level // Improving comprehension level // Developing the ability to interpret, predict and deduce and enable students to obtain knowledge and understanding of the requirements in plant groups according to scientific standards.
	A3-The third level // Developing applied abilities (Application) // Informing students of modern techniques in Botany through showing films and scientific research.
	A4-The fourth level // provide the student with the ability to analyze (analysis) // enable students to gain knowledge in Botany.
	
	B. objectives and skills
	B1- Providing students with the additional basics related to the outputs of thinking and analysis.
	B2- Learn experimentation.
	B3- Improving the student's ability in observation.
	B4- Learn how to imitate and simulate.
	
	C. Emotional and value goals
	C1- Asking general questions during laboratory and theoretical lessons.
	C2- Assign students to report on various topics of Botany.
	C3- Enable students to conduct all experiments related to Botany.
	C4- Discussing and directing graduation research for fourth-year students.

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem)	96	**Unstructured SWL (h/w)**	6.4

الحمل الدراسي غير المنتظم للطالب خلال الفصل		الحمل الدراسي غير المنتظم للطالب أسبوعيا	
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction of Botany - Origin and development- Systematics and classification
Week 2	The nature of plant - Photosynthetic organisms –Vegetabilia kingdom -Fully parasitic plants
Week 3	The plant cell : Introduction to Cells-Cell theory- Types of microscopy - Cell membrane and
Week 4	The plant cell: Nucleus- Nucleolus-Chromosomes.
Week 5	The plant cell: Ribosomes- Protein Synthesis -Rough endoplasmic reticulum- Golgi
Week 6	The plant cell: Life Cycle -karyokinesis, cytokinesis- Meiosis, Mitosis, Mitochondria and
Week 7	The plant cell: Vacuoles and other Vesicles - Cellular Skeleton
Week 8	Mid exam
Week 9	Tissues of plant: Epidermis- Ground tissues- Supportive tissues- Meristems
Week 10	Tissues of plant: Vascular tissues- Periderm
Week 11	Organs of plant: Roots - Roots forms- Modification of roots -Anatomy of root
Week 12	Organs of plant: Stems- Modification of stems - Anatomy of stem
Week 13	Organs of plant: Leaves - Leaves form - Anatomy of leaves, Flowering plants
Week 14	Photosynthesis
Week 15	Final exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab1 The Plant cell (Living & non-Living contents)

Week 2	Lab2 The Cell wall
Week 3	Lab3 The cell division (Mitosis & Meiosis)
Week 4	Lab4 The Epidermis in Dicot & Monocot
Week 5	Lab5 The plant tissues: Parenchyma tissue
Week 6	Lab6 The plant tissues: Collenchyma tissue
Week 7	Lab7 The plant tissues: Sclerenchyma tissue
Week 8	Mid exam
Week 9	Lab8 The plant tissues: Xylem & Phloem
Week 10	Lab9 Organs of plant: The Root
Week 11	Lab10 Organs of plant: The Stem
Week 12	Lab11 Organs of plant: The Leaf
Week 13	Lab12 Organs of plant: The Flower
Week 14	Lab13 Organs of plant: The Fruit
Week 15	Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Introduction to Botany, Alexey Shipunov Shipunov, Alexey. Introduction to Botany. Lecture notes. February 8, 2018 version	Yes
Recommended Texts	BOTANY ,TAMIL NADU TEXTBOOK CORPORATION COLLEGE ROAD, CHENNAI - 600 006.Government of Tamil Nadu First edition – 2005.	Yes
Websites	http://ashipunov.info/shipunov/school/biol_154	

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	**Organic Chemistry**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-1212**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Waseem Yousif Mohammed		**e-mail**	WaseemYousif@uodiyala.edu.iq	
Module Leader's Acad. Title	Lecturer		**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	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Analytical Chemistry	**Semester**	1
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The students will acquire a broad understanding of the knowledge base in Organic Chemistry and its terminology or discourse. They will operate in a range of varied but predictable contexts that require the use of a specified range of techniques and information sources. The student will be required to identify principles and concepts underlying theoretical frameworks. The student will take responsibility for the nature and quality of outputs through defined problem classes.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of this module students should be able to: • Introduction to organic chemistry, bonding, hybridization, resonance and delocalization. • Functionality, nomenclature, structure of functional groups affecting their reactivity. • Conformation of straight chain alkanes, structural isomers. • Configuration, chirality, enantiomers/diastereomers, Cahn-Ingold-Prelog priority rules (R/S) and Fischer/Newman projections. • Hydrocarbon rings, strain energy and effect of substitution, chair and boat cyclohexane, conjugation and role of cyclization in benzene aromaticity.

Indicative Contents المحتويات الإرشادية	The module will include: 1. General concepts in organic chemistry for predicting atom and electronic structure of molecules, stability, reactivity and molecular properties (bond strength, pH etc.) 2. General concepts and mechanisms underlying organic reactions and ability to draw the mechanism for a given reaction or to give reagents required for an organic reaction. Throughout the course examples will be provided to link the underlying concepts and reactions with biological (e.g. metabolism) and pharmaceutical design (e.g. drugs).

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lessons of all units will be offered in an interactive lecture where student participation ismandatory either by forming small group discussion in class, exchange ideas and questionone another. Where applicable students will be assigned problems to solve and encouraged toassess one another. Learning material will be supplied to students in class or uploaded onBlackboard learning management system. Students will also be regularly referred to relevantsection of the prescribed text book. Most of the tutorial work will be done as self-study orwith the assistance of a tutor. The teacher will facilitate lectures and laboratory experimentsessions with the assistance of a tutor or laboratory demonstrator. Assessment will be bothformative and summative. Formative assessment refers to assessment whose purpose is tomonitor student learning but will not be graded. Summative assessment refers to assessmentgiven to students for grading such as theory tests, practical tests and examination.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	79	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	96	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

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

assessment	**Exam**				
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Hydrocarbons
Week 2	IUPAC name of alkanes
Week 3-4	Coupling of alkyl halides with organometallic compound
Week 5-6	Preparation of alkenes
Week 7	Addition of halogen bromide. Peroxide effect
Week 8	Oxidation of tributylborane gives butanol .
Week 9	Free – radical polymerization of alkene
Week 10-	Mid exam
Week 12	AROMATIC COMPOUND
Week 13	Representation of benzene ring
Week 14	Polysubstituted Benzenes
Week 15	Determination of orientation:-

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab1 Boiling point Definition
Week 2	Lab2 Experimental Procedures Boiling Point
Week 3	Lab3 Distillation
Week 4	Lab4 Types of Distillation:
Week 5	Lab5 PROCEDURE Distillation
Week 6	Lab6 Extraction
Week 7	Lab7 Procedure Extraction
Week 8	Mid exam
Week 9	Lab8 Definition Melting Point
Week 10	Lab9 Procedure: Melting Point
Week 11	Lab10 Recrystallization: Purification of Crystalline Organic Compounds
Week 12	Lab11 Procedure: Recrystallization
Week 13	Lab12 Sublimation
Week 14	Lab13 Procedure Sublimation
Week 15	Final exam

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

		Library?
Required Texts	The foundations of analytical chemistry, part one and two, by Dr. Moayad Al-Abaiji	Yes
Recommended Texts	1. Basset, J.et.al, Trans. By A Hadyana Pudjaatmaka dan L. Setiono, 1994, 2. Vogel, Quantitative Inorganic Analysis, 4th Ed., Jakarta: Penerbit Buku Kedokteran E G C. Svehla, G. & Vogel, A.L., Trans. By Setiono, 1985, 3. A Quantitative Inorganic Analysis, 3rd Ed., New York: John Wiley & Sons Inc. Skoog, D.A. & West, D.M., 1990 4. Analytical Chemistry, 5th Ed., Philadelphia: Sounders Golden Sunburst Series	YES
Websites	www.chemicalprocessing.com	

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	**Biostatistics**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-1213**				
ECTS Credits	**5**				
SWL (hr/sem)	**130**				
Module Level	UGx11 1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Dr. Anwar Nouruddin Imran		**e-mail**	anwarmath@uodiyala.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	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	General Mathematics	**Semester**	1
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	▪ To discuss and critic reports and articles applying biostatistics to epidemiology ▪ To conduct preliminary/simple statistical analysis and to plan more sophisticated future statistical analyses ▪ To work with scientific experts including biostatisticians, epidemiologists and public health professionals
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Extract the most useful/important information from scientific articles 2. Interpret graphical summaries and statistical tables 3. Criticize the statistics of simple epidemiological studies 4. Describe the study population using the appropriate indicators 5. Formulate statistical hypothesis according to the objective aimed by the study 6. Apply the statistical test using the R or STATA software and to interpret the results 7. Measure the strength of the association between two quantitative or qualitative variables and interpret it 8. Summarize statistical results and to write the material, methods and result sections of a report/article.

Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction and Some Basic Concept, Statistical, Population, Sample, Random Sampling View Data, Frequency Distribution Table Measures of Central Tendency, Median, Mode Scale of variance, rang, variance, Standard deviation, Standard error, coefficient of variance Random Variable, discrete random variable, continuous random variable Distribution, Binomial Distribution, Normal Distribution Mathematical expectation concept Significance difference test Regression, correlation coefficient Exercises and discussion Type of distribution, discrete distribution, continuous distribution What is the distribution theory Preparatory week before the final Exam

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Concepts Fundamental
Week 2	Presentation of Data
Week 3	Measures of Central Tendency
Week 4	Measures of Dispersion
Week 5	The distributions, the binomial distribution, normal distribution
Week 6	Statistical tests: T test, Z test, X test, F test
Week 7	Analysis of variance, experiment, unit experimental, treatment, refined, degrees of freedom, total squares, mean Squares
Week 8	Regression, correlation coefficient
Week 9	SPSS statistical program introduction and definition
Week 10	Introducing SPSS tools
Week 11	Application analysis examples of laboratory experiments using the SPSS program
Week 12	Methods of expressing the statistical results of biological experiments Variance
Week 13	Analysis of Variance
Week 14	Some Special Probability distributions
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Hogg, R. V., McKean, J. W., & Craig, A. T. (2019). Introduction to mathematical statistics. Pearson.	Yes
Recommended Texts	Antonisamy, B., Premkumar, P. S., & Christopher, S. (2017). Principles and Practice of Biostatistics-E-book. Elsevier Health Sciences.	Yes
Websites	https://www.sciencedirect.com/topics/medicine-and-dentistry/biostatistics	

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	**Safety and Biosecurity**			**Module Delivery**	
Module Type	**Supporter**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-1204**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Ibtihal Hameed Mohsin		**e-mail**	ibtihalhameed@uodiyala.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The basic objective of a biosafety program is the containment of potentially harmful biological agents. The purpose of containment is to reduce or eliminate exposure of laboratory workers, other persons, and the outside environment to potentially hazardous agents: ▪ Identify relevant biosafety regulations and documentation ▪ Apply biosafety and biosecurity concepts in the laboratory setting ▪ Organize laboratory space according to its biosafety level ▪ Select appropriate equipment for the biosafety level of their laboratory ▪ Manage biosafety-related risks in their laboratory
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Biosafety and biosecurity address the safe handling and containment of infectious microorganisms and hazardous biological materials in the laboratory setting. Whereas biosafety aims at protecting public health and the environment from accidental exposure to biological agents, biosecurity deals with the prevention of misuse through loss, theft, diversion, or intentional release of pathogens, toxins, and any other biological materials.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. **A. Cognitive goals** **A1-The first level //** Knowledge development // Develop the student's ability to

	recall what he learned about biosafty and enable students to obtain knowledge and understanding of the intellectual and applied framework in the biosafety and biosecurity.
	A2-The second level // Improving comprehension level // Developing the ability to interpret, predict and deduce and enable students to obtain knowledge and understanding of the requirements in biological risks in lab.
	A3-The third level // Developing applied abilities (Application) // Informing students of modern protocols in Biohazardous Waste and risk assessment.
	A4-The fourth level // provide the student with the ability to analyze (analysis) // enable students to gain knowledge in safety.
	
	B. objectives and skills
	B1- Providing students with the additional basics related to the outputs of thinking and analysis.
	B2- Learn experimentation.
	B3- Improving the student's ability in observation.
	B4- Learn how to imitate and simulate.
	
	C. Emotional and value goals
	C1- Asking general questions during the theoretical lessons.
	C2- Assign students to report on various topics of biosafety.
	C3- Enable students to apply the protocols of biosecurity in lab.

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

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	27	**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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All

	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Biohazard Definition
Week 2	Rules, Regulations & Guidelines
Week 3	Risk Assessment
Week 4	Biological Safety and Biosafety Levels
Week 5	The Biosafety Level 1 Laboratory
Week 6	The Biosafety Level 2 Laboratory
Week 7	Biological Safety Level 3 Laboratories
Week 8	**Mid Exam**
Week 9	Laboratory Biosecurity
Week 10	Safety Equipment
Week 11	Decontamination and waste management
Week 12	Biohazardous Waste
Week 13	Biohazard Spill Clean-Up Procedures
Week 14	Use of Animals, Human Subjects and Materials in Research
Week 15	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Salerno, R. M., & Gaudioso, J. (Eds.). (2015). *Laboratory biorisk management: biosafety and biosecurity*. CRC Press.	Yes
Recommended Texts	Burnette, R. (2013). *Biosecurity: understanding, assessing, and preventing the threat*. John Wiley & Sons. Karus, A., Praakle, K., Saar, T., Must, K., Randoja, H., & Viltrop, A. (2018). Biosafety and biosecurity manual. Zhou, D., Song, H., Wang, J., Li, Z., Xu, S., Ji, X., ... & Xu, J. (2019). Biosafety and biosecurity. *Journal of biosafety and biosecurity*, *1*(1), 15-18.	No
Websites	https://www.cdc.gov/safelabs/resources-tools/biosafety-resources-and-tools.html	

Grading Scheme مخطط الدرجات

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

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 Skills**			**Module Delivery**	
Module Type	**Basic**			☒**Theory** ☐**Lecture** ☒**Lab** ☐ **Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**UD03**				
ECTS Credits	**4**				
SWL(hr/sem)	**100**				
Module Level		1	**Semester of Delivery**		
Administering Department		Science and Engineering	**College**	College of Engineering College of Science	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		1/9/2024	**Version Number**	2	

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	
Module Objectives أهداف المادة الدراسية	1. Training students on the basics of using the computer and providing them with the necessary skills to deal with the computer with high efficiency. 2. Assisting the student in distinguishing and developing his\ her scientific and artistic abilities. 3. Enriching the student's skills to be able to deal with the computer with high efficiency. 4. Providing students with away to use other modern technologies related to the educational process.

Module Learning Outcomes **مخرجات التعلم للمادة الدراسية**	1. Enabling the student to know the concepts of information technology by learning the basics of the computer. 2. Enabling the student to know about the use of GUI operating systems. 3. Enabling the student to deal with the skills of using the operating system (Windows operating system) through exploring, customizing, and controlling its settings. 4. Enabling the student to work on the word processing program (Microsoft Word). 5. Enabling the student to work on the spreadsheet program (Micros of excel). 6. Enabling the student to work on the presentation program (Microsoft PowerPoint).
Indicative Contents المحتوياتالإرشادية	**Indicative content includes the following.** • Course introduction(4hrs) • Working with GUI operating systems with a focus on Microsoft Windows OS • Microsoft Office Word(MSWord) • Microsoft Office Excel(MS Excel) • Microsoft Office PowerPoint(MS PowerPoint)
Description	Overview of computers: basic components, applications. GUI operating systems: Microsoft Windows operating system. Microsoft Office Word: getting started with Word, editing a document and formatting text and paragraphs, adding tables and inserting graphic objects, controlling page appearance and proofing a document. Microsoft Office Excel: getting started with Excel, sorting, selecting and subtotaling data,formulasandfunctions,worksheetformattingandpresentation.MicrosoftOffice PowerPoint: getting started with PowerPoint, developing a PowerPoint presentation, adding graphical elements to your presentation and modifying objects in your presentation, adding graphical elements, tables and charts to your presentation and modifying objects in your presentation, prepare to deliver your presentation.

Learning and Teaching Strategies استراتيجيات التعلم و التعليم	
Strategies	**In this course, students are guided by:** • Using different examples. • Using different styles of discussion that aim to connect the theoretical and practical sides. • Askingquestionsandgivingexercisesthatrequireanalysisandconclusions related to lectures. • Encourage students to participate in discussions and do the practical work. • Encourage students to work in groups.

Student Workload(SWL) **الحمل الدراسي للطالب محسوبة لـ 15 اسبوع**			
Structured SWL(h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**64**	**Structured SWL(h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	**4**

Unstructured SWL (h/sem) الحمل الدرلسي اللامنتظم للطالب خلال الفصل	**36**	**Unstructured SWL(h/w)** الحمل الدرلسي اللامنتظم للطالب خلال الفصل أسبوعيا	**2.4**
Total SWL (h/sem) الحمل الدرلسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight(Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10%(10)	6 and 12	
	Assignments	2	10%(10)	2 and 13	
	Projects/ Lab.	1	10%(10)	Continuous	All
	Report	1	10%(10)	13	
Summative assessment	**Midterm Exam**	2hr	10%(10)	9	
	Final Exam	3hr	50%(50)	16	All
Total assessment			**100%(100Marks)**		

Delivery Plan (Weekly Syllabus)
المنهاج الأسبوعي النظري

	Material Covered
Week1	Overview of computers and their basic components and applications
Week2	Introduction to windows operations system
Week3	Operation System properties, Difference between OS,program ,software , application
Week4	Network and internet (setting ,www, Email, search Engine)
Week5	Microsoft Office Word: Editing a Document and Formatting Text and Paragraphs
Week6	Microsoft Office Word: Adding Tables and Inserting Graphic Objects
Week7	Microsoft Office Word: Controlling Page Appearance and Proofing a Document
Week8	Microsoft Office Excel: Getting Started with Excel
Week9	Microsoft Office Excel: Sorting, Selecting and Sub totaling data
Week 10	Microsoft Office Excel: Formulas and Functions
Week 11	Microsoft Office Excel: Worksheet Formatting and Presentation
Week 12	Microsoft Office Power Point: Getting Started with Power Point
Week 13	Microsoft Office Power Point: Developing a PowerPoint Presentation, Adding Graphical Elements to Your Presentation and Modifying Objects in Your Presentation
Week 14	Microsoft Office Power Point: Adding Graphical Elements, tables and charts to Your Presentation and Modifying Objects in Your Presentation
Week 15	Microsoft Office Power Point: Prepare to deliver your presentation

Week 16	Preparatory week before the final exam

Delivery Plan (Weekly-Lab Syllabus) **المنهاج الأسبوعي للمختبر**	
	Material Covered
Week1	Overview of computers and their basic components and applications
Week2	Introduction to windows operations system
Week3	Operation System properties, Difference between OS,program ,software , application
Week4	Network and internet (setting ,www, Email, search Engine)
Week5	Microsoft Office Word: Editing a Document and Formatting Text and Paragraphs
Week6	Microsoft Office Word: Adding Tables and Inserting Graphic Objects
Week7	Microsoft Office Word: Controlling Page Appearance and Proofing a Document
Week8	Microsoft Office Excel: Getting Started with Excel
Week9	Microsoft Office Excel: Sorting, Selecting and Sub totaling data
Week 10	Microsoft Office Excel: Formulas and Functions
Week 11	Microsoft Office Excel: Worksheet Formatting and Presentation
Week 12	Microsoft Office Power Point: Getting Started with Power Point
Week 13	Microsoft Office Power Point: Developing a PowerPoint Presentation, Adding Graphical Elements to Your Presentation and Modifying Objects in Your Presentation
Week 14	Microsoft Office Power Point: Adding Graphical Elements, tables and charts to Your Presentation and Modifying Objects in Your Presentation
Week 15	Microsoft Office Power Point: Prepare to deliver your presentation
Week 16	Preparatory week before the final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	• JoanLambertandSteveLambert,Windows10stepby step, 1st Edition 2015. • JoanLambertandCurtisFrye,MicrosoftOffice2016stepbystep,1stEdition2015.	Yes
Recommended Texts	• Michael Miller, ABSOLUTE BEGINNER'S GUIDE TO COMPUTERBASICS,5thEDITION,QUEIndianapolis,Indiana 46240, 2010. • PaulMcFedries,TEACHYOURSELFVISUALLY MICROSOFT WINDOWS 10, ANNIVERSARY	No
Websites	https://support.microsoft.com/en-us/products https://www.goskills.com/Microsoft-Office	

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	**New Headway Plus/ Beginner**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **L Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UD01**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	UGI		**Semester (s) offered**	1	
Administering Department	All Departments		**College**	College of Engineering	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**	MSc.	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

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

Module Aims, Learning Outcomes, Indicative Contents and Brief Description أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية مع وصف مختصر	
Module Aims أهداف المادة الدراسية	The module aims to develop the students' English skills in reading, writing, listening and speaking.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Read and understand simple texts in English. 2. Answer simple comprehension questions and match sentences about texts. 3. Reconstruct texts by reordering sentences. 4. Understand the main idea of a text. 5. Identify specific information in a text. 6. Writing and paraphrasing paragraphs.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. i) Grammar has a core place in language teaching and learning. ii) A wide variety of practice tasks in all the four skills are essential to language learning. iii) Everyday expressions, particularly of spoken English, also need a place in the syllabus. These can be functional, social, situational or idiomatic.
Course Description	Each unit is organized to enhance students' basic knowledge of vocabulary and grammar through reading texts. The students will learn how to form simple sentences and use them in real life situations as well as in writing different assignments. By the end of the course, students will be able to produce basic sentences and communicate in simple real-life situations.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Headway's trusted methodology combines solid grammar and practice, vocabulary development, and integrated skills with communicative role-plays and personalization. Authentic material from a variety of sources enables students to see new language in context, and a range of comprehension tasks, language and vocabulary exercises, and extension activities practice the four skills. 'Everyday English' and 'Spoken grammar' sections practice real-world speaking skills, and a writing section for each unit at the back of the book provides models for students to analyze and imitate.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل **In class lectures 2**6 **In class tests 5** **Seminars** 2	**33**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**2**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل **Library, dorm, home memorizing 5** **Preparation for tests 8** **Homework 4**	**17**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**1.1**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation
تقييم المادة الدراسية

		Time (hr)	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5, 10, 12, 15	All
	Assignments	6	20% (20)	2, 4, 6, 8, 10, 12	LO # 1, 3, 4, 5 and 6
	Seminars	2	5% (5)	Continuous	LO # 1-5
Summative assessment	**Midterm Exam**	2	20% (10)	7	LO # 1-3
	Final Exam	3	50% (50)	16	All
Total assessment			**100% (100 Marks)**		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	GRAMMAR, READING, MAIN COURSE SPEAKING, LISTENING, VOCABULARY am/is/are my/your This is… Introduction dialogues, Everyday English dialogues Introductions, Good morning! Practicing introduction dialogues. People meet each other and introduce someone else. How are you? What's this in English? Numbers 1-10 and plurals.
Week 2	He/she/they His/her. Questions Where are they from? Two people are on holiday in New York. Students ask and answer questions about where people are from. Countries, Numbers 10-20, 11-30. A set of cities and countries: Brazil, Spain… Adjectives: awful, really good, fantastic, beautiful Nouns: centre, hospital, building, park

Week 3	Verb to be is recycled and extended to include negative and question forms. We're in Las Vegas! Roleplay: in a band. An interview with the band Metro 5. Jobs: a nurse, a doctor. Personal information: surname, first name, address, married … Social expressions: I'm sorry, thanks, please…
Week 4	Possessive adjectives. Possessive 's. Has/ have Adjective + noun Irregular Plurals Paddy McNab and his family, My best friend. The alphabet, On the phone, Saying email addresses. Who are they? Listen and identify the people. The family: mother, son. Describing a friend: very beautiful, really funny…
Week 5	Present Simple: I/you/we/they a/an Adjective + noun Colin Brodie from Dundee. Role play: At a party. Where is Colin? Who is he with? At a party: Flavia and Terry are at a party in London. The lexical set of sports/food/drinks. Languages and nationalities.
Week 6	Present Simple: He/she Question and negatives Adverbs of frequency Prepositions of time Lois Maddox Talking about daily routines, Asking and answering questions about daily routines, Lifestyle questionnaire Listening a phone conversation between Lois and Elliot. Days of the week. The time. Words that go together: watch TV, get up early…
Week 7	Question words Subject Pronouns Object Pronouns Possessive Pronouns This and that A postcard from San Francisco, A holiday postcard. Describing lifestyles, preferences and places, Roleplay: conversations in town. Listening the requests with Can I……...? Adjectives: lovely, terrible, comfortable, friendly… Opposite adjectives: new/old, big/small Places: chemist, post office
Week 8	There is /are Prepositions: in, on, under, next to Vancouver-the best city in the world, What to do and where to go. Talking and asking about rooms and furniture, Giving directions. My home town, Steve talks about living in Vancouver. Rooms and furniture: living room, bedroom … In and out of town: beach, mountain, sailing,…
Week 9	Was/were born Past simple: irregular verbs It's a Jackson Pollock. Telling a story from pictures, Saying the dates in English. Magalie Dromand, Magalie dromand talks about her family. Saying years People and jobs Irregular verbs Have, do, go: have lunch, do homework, go shopping
Week 10	Past simple: regular and irregular Questions Negatives Ago Dialogues with simple past. Did you have a good weekend? Asking about holidays, A questionnaire, My last holiday, Roleplay: asking and giving directions. Angie and Rick are at work, Jack and Millie's holiday. Weekend activities: go to the cinema, have a meal… Time expressions: on Monday, last night… Sports and leisure: tennis, skiing, windsurfing… Play or go: play tennis, go skiing… Seasons: winter, summer…
Week 11	Can / can't, Adverbs, Adjective + noun Requests and offers The Internet, what can you do on the internet? Talking about what you can do, talking about everyday problems, Five people talk about what they do on the internet. Verbs: draw, run, drive… Verb noun: Listen to the radio, chat to friends Adjective noun: fast car, busy city, dangerous sport Opposite adjectives: dangerous/ safe, old/modern, old/young.
Week 12	I'd like, You are what you eat, Discussion-what is a good diet? Conversation with Adam, Shopping: bread, milk, fruit, Please and thank you Some /any, Like and would like People from different parts of the world describe what they eat. Roleplay: Ordering a meal. Birthday wishes, what people want on their birthday. stamps, cheese, ham… Food: cereal, salad, pasta, fish… In a restaurant: menu, starter, desert, soup, salmon
Week 13	Present continuous, Present simple and present continuous. This week is different, Colin, a millionaire, gives money to homeless teenagers What's the matter? Why don't you ….? What is Nigel wearing? Nigel is on holiday, What's the matter. Colors: blue, red, green… Clothes: jacket, trousers, shoes and socks… Opposite verbs: buy/sell, love/hate, open/close…
Week 14	Future plans, Revision: question words, tenses. Seven countries in seven days, Life's big events: three people talk about their family, education, work and ambitions. A mini

	autobiography. Eddie is talking to a friend about his holiday plans, social expressions Transport: travel by bus, coach, motorbike, plane… Revision
Week 15	Irregular verbs, phonetic symbols, consonants and vowels.

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	New Headway Beginner, by lizand john soars	Yes
Websites	https://www.learnenglish.de/ https://www.englishgrammar.org/ https://www.phrasebank.manchester.ac.uk/	

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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

NB 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.

Academic Program Description Form

University Name: University of Diyala
Faculty/Institute: College of Science
Scientific Department: Biology
Academic or Professional Program Name: BSc.
Assis. Prof Dr. Esam Hamid Hameed
Final Certificate Name: BSc. in Biology
Academic System: Bologna Process
Description Preparation Date: 5/9/2024
File Completion Date: 5/9/2024

Signature:
Head of Department Name:
Assis. Prof. Esam Hamid Hameed
Date: 10/9/2024

Signature:
Scientific Associate Name:
Prof. Dr. Munther Hamza Rathi
Date: 10/9/2024

The file is checked by:
Department of Quality Assurance and University Performance

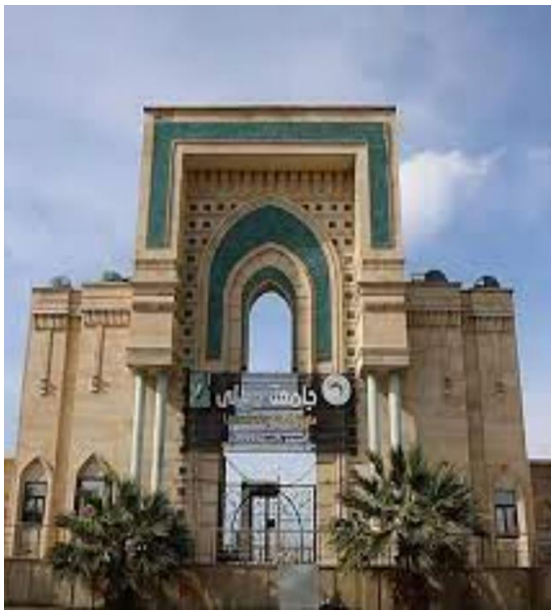
Director of the Quality Assurance and University Performance

Ghassan Sabeeh Mahmood

Approval of the Dean
Prof. Dr. Taha Mohammed Hasan

University of Diyala
جامعة ديالى

First Cycle – Bachelor's Degree (B.Sc.) – Biology
بكالوريوس - علوم حياة



September 2024

Table of Contents | جدول المحتويات

1. Mission & Vision Statement

Vision Statement

Opportunities for high-level training are available for the students enrolled in the Department of Biology, to prepare them to enter the labor market after graduation to work in the medical laboratories, teaching in the secondary schools, and working in the agricultural enterprises, environmental affairs, water resources and other institutions that have relationships with biological sciences in one way or another. The combination of instructional methods leads students to a balanced understanding of the scientific methods used by biologists to make observations, develop insights and create theories about the living organisms that populate our planet. Small class sizes within the biology program foster a close working relationship between academic staff and students in an informal and nurturing atmosphere.

Mission Statement

The biology academic staff pursues a multifaceted charge at Diyala University. The Program seeks to provide all biology students with fundamental knowledge of biology, as well as a deeper understanding of a selected focus area within the biological sciences. The curriculum and advising have been designed to prepare graduates for their professional future, whether they choose to work as field biologists specializing in botany or wildlife, or to pursue advanced degrees in the life sciences or health sciences. The biology program also provides the necessary fundamental knowledge of the life sciences to suppofi the Nursing degree, the Environmental Studies degree, and the Associate of Science degree in Forest Technology. In addition, biology courses provide a key laboratory science experience for those students seeking to complete the general education requirements

2. Program Specification

Programme code:	BSc-Bio	**ECTS**	240
Duration:	4 levels, 8 Semesters	**Method of Attendance:**	Full Time

Biology means the study of life. It is an exciting, wonderful and rapidly developing subject. Biology play an important role in overcoming the global challenges from disease to environment of the earth. The programme puts a strong emphasis on research and academic skills training across all years. The BSc in Biology is designed to provide students with a solid foundation in fundamentals aspects of plant, animal, ecology, genetics and microbiology. The programme provide skills in laboratory and practical skills that are appropriate to the study of living organisms. The programme is also designed to provide students with a wide-ranging exposure to the theory and practice of the courses, as well as an education in its diverse applications in medicine, industry, and environment.

Biology graduates are qualified for many different types of careers. The breadth of biology studied will determine the opportunities available, but regardless of the path chosen, students will have acquired a broad variety of subject-specific and general abilities that are applicable to jobs in both the biological and non-biological domains.

To graduate, a student shall have undergone 8 semesters of study including summer practical training. Course workload must meet the graduation requirements of the University based on minimum academic standards. The student must earn a minimum of 240 ECTS for the four-year programme.

Level one is focusing on fundamental topics such as Zoology, Botany, Chemistry, Biophysics and Mathematics. Level two will cover a range of concepts including biological systems and the importance of biology in real life. The students will explore topics such as Biochemistry, Entomology, Microbiology, Parasitology, Plant Taxonomy and Anatomy allowing them to develop their interests at a higher level. During level three and four, the students will study in-depth courses provide them an opportunities to learn specialist topics such as biotechnology, molecular biology, pathogenic bacteria, medical virology, pollution, histology and immunology. In the fourth year, more emphasis is placed on student centred learning exercises, workshops, and seminars. Year 4 has a compulsory undertaking a research project/dissertation.

3. Program Objectives

1. A comprehensive study of biological sciences, their applications and uses in society theoretically, scientifically and applicability.
2. Preparation of scientific cadres to work in the fields of medicine and health, agricultural and food industries.
3. Providing the students with the necessary scientific techniques and how to deal with devices and equipments that can be used in theoretical and applied studies.
4. Providing the state institutions, private and mixed sectors (medical, industrial and laboratory institutions) with specialized cadres.
5. Investigate and study the new developments in the biological sciences and keep updated with the scientific developments in this field and incorporate that within the prescribed curriculum.
6. To prepare students for a wide variety of post-baccalaureate paths, including graduate school, professional training programs, or entry level jobs in any area of biology.

4. Student Learning Outcomes

Biology is the study of the organization and operation of life at the molecular, cellular, organism, and population levels. Graduates obtain information on the historical, technical and social aspects of biology and utilize basic knowledge toward realizing broader concepts. The Department offers a Bachelor of Science in Biology with a concentration in General Biology; Pre-medicine / Pre-dentistry; Biotechnology/Molecular Biology and a minor in Secondary Education that leads to a Public Instruction License. Additionally, the Department offers courses to a large number of students from other departments and supports pre-professional programs. The Biology curriculum and experiences are designed to prepare students, in part, for entry into professional health programs, graduate studies, technical careers and education.

1. Graduates will be able to illustrate the structure and function cellular components and explain how they interact in a living cell.
2. Graduates will be able to formally communicate the results of biological investigations using both oral and written communication skills.
3. Graduates will be able to perform laboratory experiments and field studies, by using scientific equipment and computer technology while observing appropriate safety protocols.
4. Graduates will be able to demonstrate a balanced including the historical development of foundational concept of how scientific knowledge develops, theories and laws and the nature of science.
5. Graduates will be able to demonstrate scientific quantitative skills, such as the ability to conduct simple data analyses.
6. Graduates will be able to use critical-thinking and problem-solving skills to develop a research project and/or paper.

5. Academic Staff

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6. Credits, Grading and GPA

Credits

Diyala University is following the Bologna Process with the European Credit Transfer System (ECTS) credit system. The total degree program number of ECTS is 240, 30 ECTS per semester. 1 ECTS is equivalent to 25 hrs student workload, including structured and unstructured workload.

Grading

Before the evaluation, the results are divided into two subgroups: pass and fail. Therefore, the results are independent of the students who failed a course. The grading system is defined as follows:

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:				
Number 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.				

Calculation of the Cumulative Grade Point Average (CGPA):

The CGPA is calculated by the summation of each module score multiplied by its ECTS, all are divided by the program total ECTS.

CGPA of a 4-year B.Sc. degree:
CGPA = [(1st ^{m}odule score x ECTS) + (2nd ^{m}odule score x ECTS) + ……] / 240

7. Curriculum/Modules

Semester 3 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
Bio-2311	Entomology I	77	50	5.00	C	Bio-1101
Bio-2312	Plant Anatomy	77	50	5.00	C	Bio-1201
Bio-2313	Invertebrates	77	42	5.00	C	Bio-1101
Bio-2314	Plant Groups	77	46	5.00	C	
Bio-2315	Biochemistry I	77	50	5.00	C	Bio-1212
Bio-2316	Microbiology I	77	50	5.00	C	

Semester 4 | 30 ECTS | 1 ECTS = 25 hrs

Code	Module	SSWL	USSWL	ECTS	Type	Pre-request
Bio-2411	Entomology II	77	65	5.00	C	Bio-2311
Bio-2412	Plant Taxonomy	77	60	5.00	C	Bio-2312
Bio-2413	Parasitology	77	60	5.00	C	
UD24	Extinct Baath Party Crimes	33	17	2.00	B	
Bio-2414	Biochemistry II	77	65	6.00	C	Bio-2315
Bio-2415	Microbiology II	77	65	7.00	C	Bio-2316

8. Contact

Program Manager:
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Program Coordinator:
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Ministry of Higher Education and Scientific Research
University of Diyala
College of Science
Department of Biology

MODULE DESCRIPTION FORM
FIRST CYCLE
LEVEL TWO

وصف المقرر لمسار بولونيا
المستوى الثاني
الدورة الاولى

2024/2025

Semester Three

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Entomology I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-2311**				
ECTS Credits	**5**				
SWL (hr/sem)	**127**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Sanaa Nagem Abed		**e-mail**	sanaa.abed@uodiyala.edu.iq	
Module Leader's Acad. Title	Assist professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Sanaa Nagem Abed		**e-mail**	sanaa.abed@uodiyala.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	General Zoology	**Semester**	1
Co-requisites module	Entomology II	**Semester**	4

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Introducing the basic concept of Entomology. 2. Exposing the importance of insects to our life and Environment. 3. Understanding the external morphology of a typical insect. 4. Understanding the internal anatomy of a representative insect. 5. Exposing the varied types of insect growth, development and metamorphosis
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Make the students familiar with the concept Entomology and Arthropoda 2. Make the student able to recognize class Insecta 3. Identifying and Insects Integuments & Ecdysis 4. Recognizing insects 5. Recognizing insects body parts and head 6. Recognizing insects Thorax & appendages 7. Recognizing insects' Abdomen parts 8. Identifying and recognizing insects' digestive system parts 9. Identifying and recognizing insects' circulatory system parts and functions 10. Recognizing insects' Respiratory & circulatory systems 11. Recognizing insects' nervous system parts and functions 12. Identifying and recognizing insects' reproductive system

	13. Identifying and recognizing insects' growth & development 14. Recognizing how to control insects
Indicative Contents المحتويات الإرشادية	Throughout the course examples will be provided to link the underlying concepts with insects and enviroment

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	1. Lessons of all units will be offered in an interaction lecture where student participation is mandatory either by forming small discussion groups in class, or b exchanging ideas and question one another. 2. Where applicable students will be assigned problems to solve and encouraged to assess one another. 3. Learning material will be supplied to students in class or uploaded on Blackboard learning management system. 4. Students will also be regularly referred to relevant section of the prescribed text book. 5. Most of the tutorial work will be done as self-study or with the assistance of a tutor. 6. The teacher will facilitate lectures and laboratory experiment sessions with the assistance of a tutor or laboratory demonstrator. Assessment will be both formative and summative. Formative assessment refers to assessment whose purpose is to monitor student learning but will not be graded. Summative assessment refers to assessment given to students for grading such as theory tests, practical tests and examination.

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.3
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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Entomology, Arthropoda general Characteristic of Arthropoda
Week 2	Class Insecta and its characteristics, the importance of Insects
Week 3	Insects Integuments & Ecdysis
Week 4	Insect body parts: Head & appendages
Week 5	Insect body parts: Thorax & appendages
Week 6	Insect body parts: Abdomen & appendages
Week 7	Mid-term Exam
Week 8	Insects Internal Anatomy: Digestive system
Week 9	Circulatory system
Week 10	Respiratory system
Week 11	Nervous system
Week 12	Reproductive system
Week 13	Insects' growth and development (Metamorphosis)
Week 14	Insects control
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Collecting and preserving Insects
Week 2	Lab 2: Killing and preserving methods
Week 3	Lab 3: Insects head parts and orientations
Week 4	Lab 4: Antennae parts and modifications
Week 5	Lab 5: Insects mouth parts
Week 6	Lab 6: Modification of insects mouth parts
Week 7	Lab 7: Mid-term Exam
Week 8	Lab 8: Insects thorax
Week 9	Lab 9: Insects legs and their modification
Week 10	Lab 10: Insects wings and their modification
Week 11	Lab 11: Insects Anatomy (Periplant amiricana)
Week 12	Lab 12: Digestive system of Periplant (amiricana)
Week 13	Lab 13: Circulatory and Respiratory systems of Periplant amiricana
Week 14	Lab 14: Nervous system of Periplant amiricana
Week 15	Lab 15: Reproductive systems of Periplant amiricana

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Dyer, L. A. (2023). Essential Entomology.	Yes
Recommended Texts	Gullan, P.J & Cranston, P.S. (2010). The Insects, An outline of Entomology. 4th Ed. Wiley Blackwell Goddard, J. (2022). Public health entomology. CRC Press.	Yes
Websites	https://profiles.uonbi.ac.ke/foyieke/files/practical_training_manual_for_entomology.pdf https://shodhganga.inflibnet.ac.in/bitstream/10603/163876/9/09_chapter%206.pdf http://www.cassavabiz.org/production/proddocs/INSE-SCR.PDF	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plant Anatomy**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-2312**				
ECTS Credits	**5**				
SWL (hr/sem)	**127**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Khazal Dh. Wadi		**e-mail**	dr.khazal@uodiyala.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Khazal Dh. Wadi		**e-mail**	dr.khazal@uodiyala.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	General Botany	**Semester**	2
Co-requisites module	Plant Taxonomy	**Semester**	4

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. The study of plant anatomy seeks to clarify the differences in the composition of plant tissues that occur as a result of the different plant environment 2. This course deals with all types of plant tissues in each part of the plant. 3. Students learned to prepare anatomical sections from plant parts. 4. Developing skills in distinguishing between plant tissues through the use of a microscope.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**At the end of this module students should be able to:** 1. Recognize the plant anatomy and plant body. 2. Recognition the plant cell. 3. Recognition the meristematic tissues and permanent tissues. 4. Recognition secretory cell &tissues. 5. Recognition the internal structure of plant body. 6. Recognition secondary growth. 7. Recognition the Complex stomata and Trichomes
Indicative Contents المحتويات الإرشادية	**Indicative content includes the following:** ▪ Plant anatomy is one of the sciences specialized in studying plant tissues and determining the differences in the nature of the tissue depending on the

	nature of the environmental conditions in which the plant lives. It also studies its relationship to other sciences, such as ecology, cellular science, plant taxonomy, and others. ▪ In plant anatomy, scientists classify tissues into two main divisions: meristematic tissues and permanent tissues. The classification was based on the basis of origin, location within the plant, and physiological function. ▪ Explains the basic theories that show the origin of the developing meristematic peaks The indicative content of plant anatomy includes the study of the types of tissues, their function, and their location in the plant, as well as the study of the differences between the tissues of plant parts such as the root, stem, leaf, flower, seed, and fruit. And study the effects of the environment on the tissues

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	Introducing the student to the internal structure of the plant body by dissecting its various organs, studying their sites, constituent tissues, adapting them to carry out their various functions, studying the types of cells that make them up and the function of each type. This science is in fact the study of the internal morphology of plant.

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.3
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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Plant anatomy, importance and objectives, identification of the primary plant body and its growth and secondary body and its growth
Week 2	Plant cell: its living and non-living components
Week 3	Cell wall, Pits and its types
Week 4	Meristematic tissues, theories of shoot& root apex
Week 5	Permanent tissue - Dermal tissue
Week 6	Parenchyma, collenchyma and sclerenchyma
Week 7	Exam 1
Week 8	Xylem & Phloem
Week 9	Secretory cells and tissues
Week 10	Complex stomata and Trichomes
Week 11	The internal structure of plant body
Week 12	Secondary growth in plant body
Week 13	Vascular cambium
Week 14	Periderm, cork cambium and bark.
Week 15	Exam 2

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to plant body.
Week 2	Lab 2: Plant cell
Week 3	Lab 3: Plant cell
Week 4	Lab 4: Types of pith, Stomata and Trichomes
Week 5	Lab 5: Meristematic tissues
Week 6	Lab 6: Permanent tissues
Week 7	Lab 7: Dermal tissues
Week 8	Lab 8: Vascular tissues
Week 9	Lab9 : Secretory tissues
Week 10	Lab 10: Internal Structure of root
Week 11	Lab 11: Internal Structure of stem
Week 12	Lab 12: Internal Structure of leaf
Week 13	Lab 13: Secondary growth
Week 14	Lab 14: Exam
Week 15	Lab 15: Review of previous laboratories

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Rudall, P. J. (2020). Anatomy of flowering plants: An introduction to plant structure and development. Cambridge university press.	Yes
Recommended Texts	De Craene, L. P. R. (2022). Floral diagrams: an aid to understanding flower morphology and evolution. Cambridge University Press.	Yes
Websites	https://www.botanicalartandartists.com/plant-forms-and-anatomy.html https://www.khanacademy.org/science/up-class-11th-biology/x6cdb38ba1d131d88:anatomy-of-flowering-plants	

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	**Invertebrate**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-2313**				
ECTS Credits	**5**				
SWL (hr/sem)	**119**				
Module Level	**2**	**Semester of Delivery**	3		
Administering Department	Dept. of Biology	**College**	College of Science		
Module Leader	Asraa Dawod Farhan	**e-mail**	asraa@uodiyala.edu.iq		
Module Leader's Acad. Title	Lecturer	**Module Leader's Qualification**	Ph.D.		
Module Tutor	Asraa Dawod Farhan	**e-mail**	asraa@uodiyala.edu.iq		
Peer Reviewer Name		**e-mail**			
Scientific Committee Approval Date	1/9/2024	**Version Number**	2		

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	General Zoology	**Semester**	1
Co-requisites module	Parasitology	**Semester**	4

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- To understand the basic principles of Invertebrate. 2. Identifying and studying Invertebrate that infect humans and animals in detail 3. Studying Classification of each Invertebrate in terms of external appearance, life cycle, pathological and epidemiological causes, and methods of diagnosis and prevention.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of this module students should be able to: • Student Learning Outcome. • By the end of the course, the students are being able to. • Develop advanced academic knowledge about the concepts and principles of Invertebrate. • List the different terms associated with Invertebrate. • Detail knowledge about the Invertebrate and its applications. • Conducting discussions that enable the student to link causes with natural causes. • Having knowledge about the up-to-date advancing and development in this field of subject • In addition to learning practically the technique of examining, using, how to

	collect the different type of speciemns and how to prepare it for examinations and be familiar with the results and writing reports. • Define the relationships between • Identify the most important phylums and species that infect humans and animals. • Discuss the different characteristics of Invertebrata.
Indicative Contents المحتويات الإرشادية	Emotional and value goals 1. Enable students to cooperate with each other in solving practical assignments. 2. Enabling students to focus on the topic of the lesson and harmony and interaction with it. 3. Enabling students to organize the information and data they receive during the lesson. 4. Enabling the students to recreate their way of thinking towards living beings and appreciating the greatness of the Almighty Creator.

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	Evaluation modalities: 1- Practical tests 2- Theoretical tests 3- Reports and studies 4- Daily exams with self-solving questions 5- Grades determined by homework

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	42	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	General introduction, history of science Invertebrate and importance
Week 2	Classification of Invertebrate
Week 3	Kingdom: Protista
Week 4	Class: Ciliophora
Week 5	Class: Sporozoa
Week 6	Phylum: Porifera
Week 7	Radiata: The Phylum Cnidaria (Pron: Nee- daria).
Week 8	Mid Exam
Week 9	Platyhelminthes (Flatworm)(Acoelomates)
Week 10	Round worms (Nematodes)
Week 11	Enterobius vermicularis (Pinworm)
Week 12	Phylum Mollusca
Week 13	Phylum: Aschelminthes
Week 14	Phylum: Annelida
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction and importance of Invertebrates and
Week 2	Classification Protozoa
Week 3	Introduction of Kingdom Protista and Classification Protozoa
Week 4	Class: flagellates (Euglena)
Week 5	Class: Sporozoa (malaria)
Week 6	Class: Ciliata (paramecium)
Week 7	Class: Sarcodina (amoeba)
Week 8	Phylum: Porifera and Classification
Week 9	Mid exam
Week 10	The Phylum Cnidaria characteristic and Classification
Week 11	Class: Hydrpozoa
Week 12	Phylum Platyhelminthes
Week 13	Class: Trematoda
Week 14	Phylum: Annelida
Week 15	Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Arumugan, N., & Murugan, T. (2019). A textbook of invertebrates. Saras Publication.	Yes
Recommended Texts	Lewbart, G. A. (Ed.). (2011). Invertebrate medicine. John Wiley & Sons.	YES
Websites	https://www.nwf.org/Educational-Resources/Wildlife-Guide/Invertebrates https://www.amnh.org/research/invertebrate-zoology	

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 Groups**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**Bio-2314**				
ECTS Credits	**5**				
SWL (hr/sem)	**123**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Khalid Dheyaa Abdulwahid		**e-mail**	chechanikd75@uodiyala.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Khalid Dheyaa Abdulwahid		**e-mail**	chechanikd75@uodiyala.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	General Botany	**Semester**	2
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Learn about the basics and systems of plant classification. 2. Identify the ecosystems and taxa of algae and classify them. 3. Identifying and classifying the ecosystems and taxa of archegoniate. 4. Identifying and classifying the ecosystems and taxa of gymnosperm. 5. Identifying and classifying the ecosystems and taxa of angiosperm. 6. Granting the student a bachelor's degree in the theoretical and practical aspects.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Identify the science of Introduction to plant groups and know the basis of their classification. And take an evolutionary view at plant groups. 2. Learn about the general outline of plant kingdom. 3. Definition of algae and the science of Algology. And its discipline deals with the morphology, taxonomy, phylogeny, biology, and ecology of algae. 4. Clarification of plant groups belonging cryptogams in terms of habitat, classification, vegetative and reproductive forms, and life cycles. 5. A detailed explanation of the types of algae, their classification, environment, methods of reproduction, environmental importance, as well as the risks posed by some types of algae. 6. A detailed explanation about archegonia - Bryophyta - Pteridophyta , , their classification, Habitat, methods of reproduction. 7. Clarification of plant groups belonging phanerogams in terms of habitat,

	classification, and life cycles. 8. A detailed explanation about flowering plants- Gymnosperms and Angiosperms, their classification and Habitat.

Indicative Contents
المحتويات الإرشادية
	Indicative content includes the following.
	A. Cognitive goals
	A1-The first level // Knowledge development // Develop the student's ability to recall what he learned about scientific facts related to algae, **Archegoniate**, and gymnosperms, angiosperms and enable students to obtain knowledge and understanding of the intellectual and applied framework in the science of botanical groups.
	A2-The second level // Improving comprehension level // Developing the ability to interpret, predict and deduce and enable students to obtain knowledge and understanding of the requirements in plant groups according to scientific standards.
	A3-The third level // Developing applied abilities (Application) // Informing students of modern techniques in algae and archegoniate through showing films and scientific research.
	A4-The fourth level // provide the student with the ability to analyze (analysis) // enable students to gain knowledge in algae and archegoniate.
	A5-The fifth level // Enabling students to gain knowledge about the role of algae and archegonia in the ecosystem and their importance in the periodic monitoring of the causes of pollution in the aquatic ecosystems.
	B. objectives and skills
	B1- Providing students with the additional basics related to the outputs of thinking and analysis.
	B2- Learn experimentation.
	B3- Improving the student's ability in observation.
	B4- Learn how to imitate and simulate.
	C. Emotional and value goals
	C1- Asking general questions during laboratory and theoretical lessons.
	C2- Assign students to report on various topics of algae, archegonia , gymnosperms, and angiosperms.
	C3- Enable students to conduct all experiments related to isolating, diagnosing and classifying algae and archegonia.
	C4- Discussing and directing graduation research for fourth-year students.

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

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	**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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to plant groups: Basis of classification-Five Kingdom System-Kingdom Plantae
Week 2	Algology (Phycology): Introduction to Phycology (definition and characteristics of algae)
Week 3	Division: Cyanophyta -Habitat and general characteristics- Classification of blue green algae
Week 4	Division: Chlorophyta-Habitat and general characteristics- Classification of green algae.
Week 5	Division: Chlorophyta- Growth, reproduction and life cycles in Chlorophyta.
Week 6	Division: Euglenophyta -Habitat and general characteristics- Classification of Euglenophyta.
Week 7	Division: Chrysophyta- Habitat and general characteristics- Classification of Chrysophyta.
Week 8	Division: Phaeophyta- Habitat and general characteristics- Classification of Phaeophyta.
Week 9	Division: Phaeophyta-Characteristics and life cycle of *Ectocarpus* sp., *Laminaria* sp. & *Fucus* sp.
Week 10	Division: Rhodophyta - Habitat and general characteristics- Classification of Rhodophyta.
Week 11	Division : Rhodophyta - Characteristics and life cycle of *Bangia* sp. and *Nemalion* sp.
Week 12	Archegoniate: Division: Bryophyta-Habitat and general characteristics-Classification of mosses.
Week 13	Archegoniate: Bryophyta- Characteristics and life cycle of *Anthoceros* sp. and *Sphagnum* sp.
Week 14	Archegoniate: Division: Pteridophyta - Habitat and general characteristics- Classification of ferns.
Week 15	Phanerogams: Habitat and general characteristics of Gymnospem and Angiosperm.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: General Student Lab Guidelines
Week 2	Lab 2: Introduction to plant groups-The basis of their classification, an evolutionary view.
Week 3	Lab 3: Cyanophyta (Blue-green algae)- General characteristics, Diversity of vegetative forms.
Week 4	Lab 4: Chlorophyta (Green algae)- Unicellular and colonial forms-General characteristics.
Week 5	Lab 5: Chlorophyta- Filamentous forms- General characteristics- classification and reproduction.
Week 6	Lab 6: Charophyta - General characteristics, Principles of classification.
Week 7	Lab 7: Euglenophyta - General characteristics, Principles of classification.

Week 8	Lab 8: Chrysophyta, Diatoms - General characteristics, Principles of classification.
Week 9	Lab 9: Phaeophyta and Giant brown algae- General characteristics, Principles of classification.
Week 10	Lab 10: Rhodophyta (red algae) - General characteristics, Principles of classification.
Week 11	Lab 11: Bryophyta (Mosses)- Hepaticae -Characteristics and development.
Week 12	Lab 12: Anthocerotophyta -Sphenopsida- General characteristics, Principles of classification.
Week 13	Lab 13: Low vascular plants -Psilophyta - General characteristics, Principles of classification.
Week 14	Lab 14: Arthrophyta - Equisetum - General characteristics, Principles of classification.
Week 15	Lab 15: Pteridophyta -Ferns - General characteristics, Principles of classification.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Kushwaha, A. K., & Shukla, M. K. (2020). Algae: A textbook of botany.	Yes
Recommended Texts	Bellinger, E. G., & Sigee, D. C. (2010). Freshwater Algae: Identification and Use as Bioindicators John Wiley & Sons. Ltd. 1th edition. pp, 284.	Yes
Websites	https://www.britannica.com/science/algae/Classification-of-algae	

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	**Biochemistry I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-2315**				
ECTS Credits	**5**				
SWL (hr/sem)	**127**				
Module Level	2		**Semester of Delivery**	3	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Waseem Yousif Mohammed		**e-mail**	waseemyousif@uodiyala.edu.iq	
Module Leader's Acad. Title	Assist. Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Waseem Yousif Mohammed		**e-mail**	waseemyousif@uodiyala.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Organic Chemistry	**Semester**	2
Co-requisites module	Biochemistry II	**Semester**	4

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This module aims to teach you core biochemistry concepts including the structure of Carbohydrates, Lipids, Amino acids, proteins, and nucleic acids. The module will also provide a background to fundamental aspects of chemistry. This module provides you with the core knowledge and skills to enhance your performance in biological chemistry. It is a pre-requisite for second-year modules in Biochemistry II related to metabolism.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On completing the module, you will be able to... 1. Explain the basic concepts of biochemistry 2. Recall the range and structures of biological molecules 3. Summarise the relationship between chemical structure and biological function 4. Communicate key practical skills relating specifically to biochemistry 5. Illustrate essential elementary chemistry or structural organic chemistry 6. Describe the basic principles of biochemistry/chemical biology 7. Evaluate essential key facts and theory in a subdiscipline of the biosciences 8. Describe and begin to evaluate aspects of biochemistry concerning textbook material
Indicative Contents المحتويات الإرشادية	As part of this module, you will undertake Not less than thirteen laboratory sessions in the teaching laboratory (of up to 30 students) that are of 2 hrs in duration. These sessions will be undertaken in groups, and some sessions involve fine laboratory work.

	Breaks are possible and students can leave the laboratory for short periods.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Lessons of all units will be offered in an interactive lecture where student participation is mandatory either by forming small group discussions in class, exchanging ideas, and questioning another. Where applicable students will be assigned problems to solve and encouraged to assess one another. Learning material will be supplied to students in class or uploaded on the Blackboard learning management system. Students will also be regularly referred to relevant sections of the prescribed textbook. Most of the tutorial work will be done as self-study or with the assistance of a tutor. The teacher will facilitate lectures and laboratory experiment sessions with the assistance of a tutor or laboratory demonstrator. Assessment will be both formative and summative. Formative assessment refers to an assessment whose purpose is to monitor student learning but will not be graded. Summative assessment refers to assessments given to students for grading such as theory tests, practical tests, and examinations.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.3
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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to biochemistry,cell chemistry
Week 2	Carbohydrates: sugars monosaccharides
Week 3	disaccharides
Week 4	polysaccharides
Week 5	Lipids, fatty acids.
Week 6	other compounds lipids
Week 7	Amino acids, Classification of Amino Acids

Week 8	Exam
Week 9	Amino acid reactions
Week 10	Peptides & Proteins
Week 11	Classification of Proteins
Week 12	nucleic acids, synthesis chemistry
Week 13	Pyramid and purines bases
Week 14	nucleotides, nucleosides, DNA is RNA
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) **المنهاج الاسبوعي للمختبر**	
	Material Covered
Week 1	Molisch,s Test
Week 2	Benedict's test
Week 3	Barfoed's Test
Week 4	Bial،s Test
Week 5	Seliwanoff's Test
Week 6	Sucrose Hydrolysis Test
Week 7	Iodine Test
Week 8	Exam
Week 9	Qualitative tests of lipids: Solubility test
Week 10	Saponification test
Week 11	Detecting desaturation by copper acetate) & Iodine Test
Week 12	Salkowski Test & Liberman-Burchards Test
Week 13	Acrolin Test
Week 14	Rancidity
Week 15	Exam

Learning and Teaching Resources **مصادر التعلم والتدريس**		
	Text	**Available in the Library?**
Required Texts	Nelson, D. L. (2021). Lehninger Principles of Biochemistry 5th Edition. Proteins, 5, 6.	Yes
Recommended Texts	Rodwell, V. W., Bender, D., & Botham, K. M. (2018). Harper's illustrated biochemistry. McGraw-Hill.	No
Websites	https://ocw.mit.edu/courses/5-111-principles-of-chemical-science-fall-2008/ https://ocw.mit.edu/courses/7-012-introduction-to-biology-fall-2004/download/	

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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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	**Bio-2316**				
ECTS Credits	**5**				
SWL (hr/sem)	**127**				
Module Level	**2**		**Semester of Delivery**	3	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Zainab Mohammed Nsaif		**e-mail**	dr.zainab@uodiyala.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Zainab Mohammed Nsaif		**e-mail**	dr.zainab@uodiyala.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module		**Semester**	
Co-requisites module	Microbiology II	**Semester**	4

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Clinical microbiology deals with microorganisms such as pathogenic bacteria, viruses, fungi and parasites which are medically important and cause human diseases. Generally, microorganisms can cause a tremendous change on our planet and our life, there is a scientific speech says if "there is no microorganism on our earth there is no life on our planet" otherwise is also true because there are some dangerous and infectious microorganism which cause a dangerous airborne, foodborne and waterborne diseases that some of them are fatal and threaten human life. Evolution in the field of Clinical microbiology and exactly about identification of pathogenic microorganisms and the methods of chemotherapy and prophylaxes has saved the life of millions of peoples on our planet. Students will acquire a broad understanding of the basics of microbiology laboratories in terms of sterilization methods and the rules that must be adhered to when dealing with the tools and equipment used, in addition to using the laboratory techniques necessary to isolate these organisms and identify their shapes and characteristics. The student will also learn the techniques necessary to identify the types of these organisms and their groups, methods of counting, isolating and staining them.

	Course Objective: 1. To understand the basic principles of Clinical Microbiology. 2. To provide the student with the basic knowledge of microorganisms in general 3. To study the main characteristics of microbes of medical importance and their identification. 4. To teach aseptic techniques. 5. To provide an understanding of antimicrobial agents and infectious diseases. 6. To teach the basic immunological principles and methods for the study of immunological disorders.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**At the end of this module students should be able to:** • Develop advanced academic knowledge about the concepts and principles of Medical Microbiology. • Cover the importance of Microbiology and the history background of this subject. • Detail knowledge about the Medical Microbiology and its applications. • Having knowledge about the up-to-date advancing and development in this field of subject • They could be familiar with the modest instruments in the medical labs like PCR and ELISA. • In addition to learning practically the technique of examining, using, how to collect the differenttype of specimens and how to prepare it for examinations and be familiar with the results and writing reports. • Recognition the methods of sterilization in the laboratory. • Tools and equipment used in the laboratory. • Staining methods and types of dyes used to identify the types of microorganisms. • Methods of counting bacteria. • Techniques for the process of culturing on plates.
Indicative Contents المحتويات الإرشادية	The module will include: • Class attendance is regularly 85-90% of lectures each week 5 minutes before the lecture is a must. The students should also submit homework and assignments, accomplish extra classroom requirements such as preparing scientific reports, presentation and seminars and also be ready for performing quizzes, mid-term and final exams, participate in the laboratory works (practical labs) in order to pass successfully. • Basics of working in the laboratory. • Methods of dealing with tools and equipment in the laboratory.

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	Every student or small grouping students must prepare a report about a subject regarding clinical microbiology. Each report must include the following information: the logo of university or the Institute, the name of college or department, student's name, the title of the report, short description and brief introduction about the subject, aims of the report, short review literature, prospects and overviews and finally the references. Each student or small group is present his/her/there reports as a seminar (presentation) to confirm their capability to speak about a scientific subject in front of gathering in a teaching hall.

	All lessons held in the laboratory will be practical, with the participation of all students, who will be distributed into small groups to obtain the required results and encourage the spirit of competition among students and encouragement among groups to complete the experiment in the required manner.

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	50	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.3
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 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) **المنهاج الاسبوعي النظري**	
	Material Covered
Week 1	Introduction to Microbiology
Week 2	The Relevance and Scope of Microbiology, Microscopy and Specimen Preparation
Week 3	A Brief Survey of Microbes as Friends and Foes, General Characteristics of
Week 4	General Characteristics of Bacteria
Week 5	First Monthly exam
Week 6	General Characteristics of Fungi, General Characteristics of Viruses
Week 7	General Characteristics of Algae
Week 8	General Characteristics of Protozoa
Week 9	Microbial Growth, Reproduction and Control, Microbial Growth
Week 10	Measurement of Microbial Growth
Week 11	Second Monthly exam
Week 12	Physical Methods of Controlling Microbial Growth
Week 13	Chemical Methods of Controlling Microbial Growth
Week 14	Systematic Classification of Microorganisms

Week 15	Review

Delivery Plan (Weekly Lab. Syllabus) **المنهاج الاسبوعي للمختبر**	
	Material Covered
Week 1	Lab1 An introduction to microbiology, aseptic technique and safety
Week 2	Lab2 Tools and Equipment used in Microbiology Lab
Week 3	Lab3 Culture Media
Week 4	Lab4 Bacterial Staining
Week 5	Lab5 Type of the Stains/ Differential stain
Week 6	Lab6 Selective stain
Week 7	Lab7 Antibiotics
Week 8	Mid exam
Week 9	Lab8 Bacterial Count
Week 10	Lab9 Turbidimetry Determinations
Week 11	Lab10 Pour Plate Method
Week 12	Lab11 Bacterial Culture Techniques
Week 13	Lab12 Colony morphology
Week 14	Lab13 Yeast and molds
Week 15	Final exam

Learning and Teaching Resources **مصادر التعلم والتدريس**		
	Text	**Available in the Library?**
Required Texts	Dubey, R. C., & Maheshwari, D. K. (2023). A textbook of microbiology. S. Chand Publishing.	Yes
Recommended Texts	Green, L. H., & Goldman, E. (Eds.). (2021). Practical handbook of microbiology. CRC press. Parija, S. C. (2023). Textbook of microbiology and immunology. Berlin, Heidelberg, Germany: Springer.	Yes
Websites	https://microbiologyinfo.com/ https://microbe.net/resources/microbiology-web-resources/	

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.				

Semester Four

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Entomology II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-2411**				
ECTS Credits	**5**				
SWL (hr/sem)	**142**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Sanaa Nagem Abed		**e-mail**	sanaa.abed@uodiyala.edu.iq	
Module Leader's Acad. Title	Assist professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Sanaa Nagem Abed		**e-mail**	sanaa.abed@uodiyala.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Entomology I	**Semester**	3
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. Providing basic concepts of taxonomic hierarchy, identification, taxonomic characters, variations, taxonomic keys. 2. Expose the student to the concepts of Insect collection, identification and preservation. 3. Introduce the students to the main orders and families of insects
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Make the students familiar with Insects Divisions and orders 2. Make the student able to recognize insects of Subclass : Apterygota 3. Make the student able to recognize insects of Subclass: Pterygota 4. Make the student able to recognize insects of orders: Odonata, Pleceptera, Grylloblatodea and their characteristics 5. Make the student able to recognize insects of orders: Orthoptera, Phasmidia, Dermaptera 6. Recognizing insects of orders Embioptera, Dictyoptera, Isoptera 7. Recognizing insects of order: Pseoptera, Anoplura, Mallophaga 8. Recognizing insects of order Thysanoptera 9. Recognizing insects of order Neuroptera 10. Recognizing insects of order Lepidoptera 11. Recognizing insects of order Coleoptera 12. Recognizing insects of order Diptera

	13. Recognizing insects of order Hymenoptera
Indicative Contents المحتويات الإرشادية	Throughout the course examples will be provided to link the underlying concepts with insects and the environment.

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	1. Lessons of all units will be offered in an interaction lecture where student participation is mandatory either by forming small discussion groups in class, or b exchanging ideas and question one another. 2. Where applicable students will be assigned problems to solve and encouraged to assess one another. 3. Learning material will be supplied to students in class or uploaded on Blackboard learning management system. 4. Students will also be regularly referred to relevant section of the prescribed text book. 5. Most of the tutorial work will be done as self-study or with the assistance of a tutor. 6. The teacher will facilitate lectures and laboratory experiment sessions with the assistance of a tutor or laboratory demonstrator. Assessment will be both formative and summative. Formative assessment refers to assessment whose purpose is to monitor student learning but will not be graded. Summative assessment refers to assessment given to students for grading such as theory tests, practical tests and examination.

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	65	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**143**		

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

Delivery Plan (Weekly Syllabus) **المنهاج الاسبوعي النظري**

Semester Four

	Material Covered
Week 1	Introdection to Taxonomy of Insects
Week 2	Division: Apterygota (orders: Thysanura, Diplura, Protura, Collembola)
Week 3	Divisin: Pterygota (Endopterygota & Exopterygota)
Week 4	Taxonomy of Orders Odonata, Pleceptera, Grylloblatodea
Week 5	Taxonomy of Orders Orthoptera, Phasmidia, Dermaptera
Week 6	Taxonomy of orders Embioptera, Dictyoptera, Isoptera
Week 7	Mid-term Exam
Week 8	Taxonomy of order: Pseoptera, Anoplura, Mallophaga
Week 9	Taxonomy of order Thysanoptera
Week 10	Taxonomy of order: Pseoptera, Anoplura, Mallophaga
Week 11	Taxonomy of order Neuropter
Week 12	Taxonomy of order Lepidoptera
Week 13	Taxonomy of order Coleoptera
Week 14	Taxonomy of order Diptera
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) **المنهاج الاسبوعي للمختبر**	
	Material Covered
Week 1	Lab 1: Examining insects collections
Week 2	Lab 2: Introducing the student to insects of subclass : Apterygota
Week 3	Lab 3: Introducing the student to subclass: Pterygota
Week 4	Lab 4: Introducing the student to order: Odonata, Pleceptera, Grylloblatodea and their
Week 5	Lab 5: Introducing the student to orders Orthoptera, Phasmidia, Dermaptera and their
Week 6	Lab 6: Examining orders Embioptera, Dictyoptera, Isoptera and their characteristics
Week 7	Lab 7: Mid-term Exam
Week 8	Lab 8: Examining orders order: Pseoptera, Anoplura, Mallophaga
Week 9	Lab 9: Examining orders order Thysanoptera
Week 10	Lab 10: Examining order Neuropter
Week 11	Lab 11: Examining order Lepidoptera
Week 12	Lab 12: Examining order Coleoptera
Week 13	Lab 13: Examining order Diptera
Week 14	Lab 14: Examining order Hymenoptera
Week 15	Lab 15: Reexamining all the slides and insects collection to prepare for the final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	McGavin, G. C., & Davranoglou, L. R. (2023). Essential entomology. Oxford University Press.	Yes
Recommended Texts	Rivers, D. B., & Dahlem, G. A. (2022). The science of forensic entomology. John Wiley & Sons. Kimball, J. A. (2023). Entomology and Nematology. Guide to Sources for Agricultural and Biological	No
Websites	https://profiles.uonbi.ac.ke/foyieke/files/practical_training_manual_for_entomology.pdf https://shodhganga.inflibnet.ac.in/bitstream/10603/163876/9/09_chapter%206.pdf http://www.cassavabiz.org/production/proddocs/INSE-SCR.PDF	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.				

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Plant Taxonomy**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-2412**				
ECTS Credits	**5**				
SWL (hr/sem)	**137**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Khazal Dh. Wadi		**E-mail**	dr.khazal@uodiyala.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Khazal Dh. Wadi		**E-mail**	dr.khazal@uodiyala.edu.iq	
Peer Reviewer Name	Khazal Dh. Wadi		**E-mail**	dr.khazal@uodiyala.edu.iq	
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Plant Anatomy	**Semester**	3
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	**A- Cognitive goals** A1- Level 1 Knowledge Development: Developing the student's ability to recall what he learned about morphology of plant body. A 2- The second level is to improve the level of understanding (comprehension) and to develop the ability to interpret, predict and draw conclusions. A 3- The third level is the development of applied capabilities ((Application). A 4- The fourth level gives the student the ability to analyze A5- Level 5 Developing the student's ability to integrate ideas and information (synthesis level), which is the opposite of analysis A6- Level Six: Evaluation (Developing the student's ability to judge the value of the learned material. **B - The soft skills objectives of the course.** B1 - Improving the student's ability to observe (Observation). B 2 - To learn how to imitate and imitate (Imitation) B 3 - To learn the method of experimentation
Module Learning Outcomes	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize the main fields of plant taxonomy. 2. List the general terms of plant.

مخرجات التعلم للمادة الدراسية	3. Recognition the parts of plant. 4. Recognition pollination and its types. 5. Recognition the taxonomic categories 6. Recognition herbarium 7. Recognition botanical garden
Indicative Contents **المحتويات الإرشادية**	Indicative content includes the following.

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 types of simple experiments involving some sampling activities that are interesting to the students.		
Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**143**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	5% (5)	5	LO #1, #2 and #10, #11
	Assignments				
	Projects / Lab.	1	15% (15)	Continuous	All
	Report	1	5% (5)	5	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	25 % (25)	2	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

Week	**Material Covered**
Week 1	Introduction – plant taxonomy, importance, history
Week 2	General plant terms
Week 3	The Fields of plant taxonomy, classification Systems
Week 4	Morphological study of Roots, stems, Leaves
Week 5	Morphological study of Flower
Week 6	Androecium and Gynoecium
Week 7	Exam 1
Week 8	Inflorescence
Week 9	Fruits &Seeds

Week 10	pollination
Week 11	Taxonomic Categories
Week 12	The evolutionary importance of reproductive systems
Week 13	Herbarium& Herbarium specimens
Week 14	Botanical garden
Week 15	Exam 2
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) **المنهاج الاسبوعي للمختبر**	
	Material Covered
Week 1	Lab 1: Introduction to plant taxonomy.
Week 2	Lab 2: preparing plant specimens.
Week 3	Lab 3: scientific description of a plant specimen
Week 4	Lab 4: Floral formula
Week 5	Lab 5: taxonomic keys
Week 6	Lab 6: plant families
Week 7	Lab 7: plant families
Week 8	Lab 8: Scientific trip
Week 9	Lab9: plant families
Week 10	Lab 10: plant families
Week 11	Lab 11: plant families
Week 12	Lab 12: plant families
Week 13	Lab 13: plant families
Week 14	Lab 14: Exam
Week 15	Lab 15: Review of previous laboratories.

Learning and Teaching Resources **مصادر التعلم والتدريس**		
	Text	Available in the Library?
Required Texts	Singh, G. (2019). Plant systematics: an integrated approach. CRC Press.	Yes
Recommended Texts	Pandey, A. K., & Kasana, S. (2021). Plant Systematics. CRC Press. Uddin, M. Z., & Rahman, M. O. Plant Taxonomy and Systematics. Centennial Special Book, 197.	Yes
Websites	https://www.ipni.org/ https://www.aspt.net/	

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

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

MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Parasitology**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-2413**				
ECTS Credits	**5**				
SWL (hr/sem)	**137**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Asraa Dawod Farhan		**e-mail**	asraa@uodiyala.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Asraa Dawod Farhan		**e-mail**	asraa@uodiyala.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Invertebrates	**Semester**	3
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To understand the basic principles of parasitology. 2. Identifying and studying parasites that infect humans and animals in detail. 3. Studying aspects of the life of each parasite in terms of external appearance, life cycle, pathological and epidemiological causes, and methods of diagnosis and prevention.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	At the end of this module students should be able to: ▪ Student Learning Outcome. ▪ By the end of the course, the students are being able to. ▪ Develop advanced academic knowledge about the concepts and principles of parasitology. ▪ List the different terms associated with parasitology. ▪ Detail knowledge about the parasitology and its applications. ▪ Conducting discussions that enable the student to link causes with natural causes. ▪ Having knowledge about the up-to-date advancing and development in this field of subject. ▪ In addition to learning practically the technique of examining, using, how to collect the different type of specimens and how to prepare it for examinations and be familiar with the results and writing reports.

	▪ Define the relationships between the parasite and the host. ▪ Identify the most important phylums and species that infect humans and animals. ▪ Discuss the different characteristics of parasites.
Indicative Contents المحتويات الإرشادية	Emotional and value goals: 1. Enable students to cooperate with each other in solving practical assignments. 2. Enabling students to focus on the topic of the lesson and harmony and interaction with it. 3. Enabling students to organize the information and data they receive during the lesson. 4. Enabling the students to recreate their way of thinking towards living beings and appreciating the greatness of the Almighty Creator.

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	Evaluation modalities 1- Practical tests 2- Theoretical tests 3- Reports and studies 4- Daily exams with self-solving questions 5- Grades determined by homework

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 أسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	60	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**143**		

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

Delivery Plan (Weekly Syllabus) **المنهاج الاسبوعي النظري**	
	Material Covered

Semester Four

Week 1	General introduction, history of science Parasites and public relations among animals
Week 2	Parasitism features, types Parasitism, types parasites, and hosts
Week 3	Protozoa and Protozoan diseases and life cycle
Week 4	Complementing the genera belonging to the Phylum Protozoa
Week 5	Tissue and Blood flagellates (*Leishmania* spp.)
Week 6	Flagellate: Family Trypanosomatida, Genus *Trypanosoma* (African trypanosomiasis/African sleeping sickness and American trypanosomiasis
Week 7	Phylum Ciliophora
Week 8	Mid Exam
Week 9	Phylum Sporozoa (blood and tissue protozoan parasites) (*Plasmodium* species)
Week 10	*Toxoplasma gondii* (toxoplasmosis)
Week 11	Phylum Platyhelminthes
Week 12	*Heterophyes heterophyes* (Heterophyiasis)
Week 13	Liver and lung trematodes (Flukes)
Week 14	*Fasciola hepatica* (Sheep liver fluke infection/fascioliasis)
Week 15	Final Exam

Delivery Plan (Weekly Lab. Syllabus) **المنهاج الاسبوعي للمختبر**	
	Material Covered
Week 1	Introduction of parasite: Properties of phylum Protozoa: 1- Class: Flagellata; 2- Sarcodina; 3- Ciliata; 4- Sporozoa
Week 2	Class of Sarcodina, study of pathogenic genera such as *Entamoeba histolytica*
Week 3	Class of Flagellates, study of pathogenic genera such as *Giardia lamblia*, Trichomonas
Week 4	Complement of class flagellates, Tissue and Blood flagellates
Week 5	Class of Ciliata study of pathogenic genera such as *Balantidium coli*
Week 6	Class of Sporozoa study of pathogenic genera such as *Plasmodium, Toxoplasma*
Week 7	Mid exam
Week 8	Phylum: Platyhelminthes, properties and classification
Week 9	Class 1 of Platyhelminthes; Cestoda and his pathogenic genera
Week 10	Class 2 of Platyhelminthes; Nematoda and his pathogenic genera
Week 11	Phylum Nemathelminthes, properties and classification
Week 12	Pathogenic genera of Phylum Nemathelminthes, such as *Enterobius*
Week 13	Phylum Annelida, properties and classification
Week 14	Classes of Annelida such as Oligochaeta, Hirudinea
Week 15	Final exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Gardner, S. L., & Gardner, S. A. (2025). Concepts in Animal Parasitology.	Yes
Recommended Texts	Mathison, B. A., & Pritt, B. S. (2022). Medical parasitology. Henry's Clinical Diagnosis and Management by Laboratory Methods. 24th ed. Philadelphia, PA: Elsevier.	YES
Websites	https://www.cdc.gov/parasites/index.html https://bsp.uk.net/Home	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	جرائم نظام البعث في العراق			**Module Delivery**	
Module Type	**Basic learning activities**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☐ **L Tutorial** ☐ **Practical** ☒ **Seminar**	
Module Code	**UD24**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	2	**Semester of Delivery**	4		
Administering Department	جميع اقسام الكلية	**College**	College of Science		
Module Leader	Kamal Sabbar Breseem	**e-mail**	kamalsabbar@uodiyala.edu.iq		
Module Leader's Acad. Title		**Module Leader's Qualification**	MSc.		
Module Tutor	Kamal Sabbar Breseem	**e-mail**	kamalsabbar@uodiyala.edu.iq		
Peer Reviewer Name		**e-mail**			
Scientific Committee Approval Date	1/9/2024	**Version Number**	2		

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. التعرف على ماهية الجريمة لغة واصطلاحاً وماهية أقسام الجرائم. 2. التعرف على جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام 2005م. 3. تنمية وعي الطلب بجرائم نظام البعث وفق توثيق قانون المحكمة الجنائية العراقية العليا لسنة 2005م. 4. دراسة الجرائم التي ارتكبها نظام البعث على مدى سنوات طويلة واثارها النفسية والاجتماعية . 5. التعرف على صور انتهاكات حقوق الانسان وجرائم السلطة والتعرف على الجرائم البيئية لنظام البعث في العراق. 6. تعزيز الوعي بحقيقة ما جرى من مآسي المقابر الجماعية المرتكبة من النظام البعثي في العراق.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. تمكين الطالب من معرفة المفاهيم النظرية للجرائم وأركان الجرئم . 2. تمكين الطالب من معرفة أقسام الجرائم . 3. تمكين الطالب من معرفة قانون المحكمة الجنائية العراقية العليا لسنة 2005. 4. فهم تشكيل المحكمة الجنائية العراقية العليا لسنة 2005 والتعرف على تشكيل المحكمة أجراءات التقاضي امام المحكمة. 5. يتعلم الطالب أنواع الجرائم الدولية على وفق النظام الاساسي للمحكمة الجنائية الدولية. 6. معرفة الطالب بألاثارالنفسية والاجتماعية لجرائم نظام البعث. 7. يتمكن الطالب من فهم موقف النظام البعثي من الدين من خلال فهم عقيدة النظام السياسي سبيلاً لفهم موقف النظام من الدين. 8. يتمكن الطالب من التعرف على صور أنتهاكات القوانين العراقية وأنتهاكات حقوق الانسان وجرائم السلطة. 9. تمكين الطالب من التعرف على بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث. 10. يتعرف الطالب على أماكن السجون والاحتجاز لنظام البعث. 11. معرفة الطالب بالجرائم البيئية وبأثار الجرائم البيئية لنظام البعث، ويتعرف جرائم المقابر الجماعية.

Indicative Contents المحتويات الإرشادية	**<u>الجزء الاول</u> : جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا لعام 2005م، والجرائم النفسية والاجتماعية وآثارها وابرز انتهاكات النظام البعثي في العراق:** التعريف بالجريمة لغة وأصطلاحاً، اركان واقسام الجريمة (2 ساعة). جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام 2005م : أنواع الجرائم الدولية، القرارات الصادرة من المحكمة الجنائية العليا (2 ساعة). وابرز القضايا التي نظرت فيها المحكمة (2 ساعة).الجرائم النفسية والاجتماعية وآثارها وابرز انتهاكات النظام البعثي في العراق: الجرائم النفسية، اليات الجرائم النفسية (2 ساعة). اثار الجرائم النفسية ، الجرائم الاجتماعية (2 ساعة) . عسكرة المجتمع، موقف النظام البعثي من الدين (2 ساعة) . أنتهاكات القوانين العراقية، صور أنتهاكات حقوق الانسان (2 ساعة) . جرائم السلطة، بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث، أماكن السجون والاحتجاز لنظام البعث (2 ساعة). **<u>الجزء الثاني : الجرائم البيئية لنظام البعث في العراق، جرائم المقابر الجماعية :</u>** الجرائم البيئية لنظام البعث في العراق: التلوث الحربي والاشعاعي – أستعمال الاسلحة المحرمة دولياً ومخاطر الالغام. (2 ساعة). التلوث بالمواد المشعة، أثار أستخدام الاسلحة المحرمة دولياً (2 ساعة). تدمير المدن والقرى (سياسة الارض المحروقة): قصف المدن، قصف العتبات المقدسة والمساجد والحسينيات، معركة نهر جاسم ، حرق آبار النفط (2 ساعة). تجفيف الاهوارو أثارها البيئية والاجتماعية والاقتصادية (2 ساعة). ، تجريف بساتين النخيل والاشجار والمزروعات (2 ساعة). جرائم المقابر الجماعية وموقف الامم المتحدة منها (2 ساعة). احداث المقابر الجماعية المرتكبة من النظام البعثي في العراق، التصنيف الزمني لمقابر ابادة الجماعية في العراق للمدة 1963- 2003 (2 ساعة).

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	1- زيادة وعي الطالب بالجرائم التي ارتكبها نظام البعث في العراق وحقيقة ما جرى من مآسي وويلات بحق الشعب العراقي. 2- اكتساب الطالب ثقافة عامة بماهية الجرائم واركانها واقسامها وموقف المشرع العراقي منها. 3- زيادة وعي الطالب بموقف القانون الدولي والمحاكم الجنائية الدولية من الجرائم والانتهاكات التي ترتكبها الانظمة السلطوية.

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 أسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**33**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**17**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.1
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 / tutorial.	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	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered

Semester Four

Week 1	محاضرة تعريفية عن المادة واهميتها.
Week 2	التعريف بالجريمة لغة واصطلاحا، أقسام الجريمة، جرائم نظام البعث وفق قانون المحكمة الجنائية العراقية العليا عام 2005م ، أنواع الجرائم الدولية.
Week 3	القرارات الصادرة من المحكمة الجنائية العليا، وأبرز القضايا التي نظرت فيها المحكمة.
Week 4	الجرائم النفسية، اليات الجرائم النفسية.
Week5	اثار الجرائم النفسية، الجرائم الاجتماعية
Week 6	عسكرة المجتمع، موقف النظام البعثي من الدين.
Week 7	انتهاكات القوانين العراقية، صور انتهاكات حقوق الانسان، جرائم السلطة.
Week 8	بعض قرارات الانتهاكات السياسية والعسكرية لنظام البعث، أماكن السجون والاحتجاز لنظام البعث.
Week 9	الجرائم البيئية لنظام البعث في العراق: التلوث الحربي والاشعاعي – استعمال الاسلحة المحرمة دولياً ومخاطر الالغام.
Week 10	التلوث بالمواد المشعة، أثار أستخدام الاسلحة المحرمة دولياً
Week 11	تدمير المدن والقرى (سياسة الارض المحروقة).
Week 12	تجفيف الأهوار أثارها البيئية والاجتماعية والاقتصادية .
Week 13	تجريف بساتين النخيل والاشجار والمزروعات.
Week 14	جرائم المقابر الجماعية، أحداث المقابر الجماعية المرتكبة من النظام البعثي في العراق.
Week 15	التصنيف الزمني لمقابرالابادة الجماعية في العراق للمدة 1963- 2003.
Week 16	الامتحان النهائي

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	المنهج المقر الدراسي للجامعات الحكومية و الأهلية كافة كتاب وزارة التعليم والبحث العلمي ذي العدد (ت م 3/ 7588 في 2023/10/19)	نعم
Recommended Texts		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	**Biochemistry II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-2414**				
ECTS Credits	**6**				
SWL (hr/sem)	**142**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Waseem Yousif Mohammed		**e-mail**	waseemyousif@uodiyala.edu.iq	
Module Leader's Acad. Title	Assist Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Waseem Yousif Mohammed		**e-mail**	waseemyousif@uodiyala.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Biochemistry I	**Semester**	3
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The module is designed to provide students with details of the metabolism of major classes of biomolecules. This will encourage an appreciation of the diversity and interconnection of metabolic pathways, and stimulate an understanding of the applicability of metabolism in a broad range of biological contexts.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain the biosynthesis and catabolism of various metabolites in cells 2. Describe carbohydrate metabolism, particularly, gluconeogenesis and the pentose phosphate pathway 3. Describe lipid and nucleotide metabolism as well as biosynthesis and catabolism of amino acids 4. Discuss metabolic interrelationships in cells and tissues under various conditions 5. Dissect biosynthetic and catabolic pathways of diverse metabolites and their products in cells 6. Conduct laboratory practicals, collect data, interpret and discuss results
Indicative Contents المحتويات الإرشادية	Carbohydrate metabolism - Gluconeogenesis and the pentose phosphate pathway - The role of enzymes and hormones in the control of metabolisms - Metabolic roles and importance in energy supply and provision of precursors - Lipid metabolism - Function, transport and storage of lipids and other esters - Biosynthesis, degradation, and desaturation - Acetyl-CoA carboxylase and

	fatty acid synthesis - Purine and pyrimidine nucleotide metabolism - Nitrogen acquisition and amino acid metabolism - Biosynthesis and catabolism of amino acids and the regulation of pathways - Metabolic interrelationships

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	Lessons of all units will be offered in an interactive lecture where student participation is mandatory either by forming small group discussion in class, exchange ideas and question one another. Where applicable students will be assigned problems to solve and encouraged to assess one another. Learning material will be supplied to students in class or uploaded on Blackboard learning management system. Students will also be regularly referred to relevant section of the prescribed text book. Most of the tutorial work will be done as self-study or with the assistance of a tutor. The teacher will facilitate lectures and laboratory experiment sessions with the assistance of a tutor or laboratory demonstrator. Assessment will be both formative and summative. Formative assessment refers to assessment whose purpose is to monitor student learning but will not be graded. Summative assessment refers to assessment given to students for grading such as theory tests, practical tests and examination.

Student Workload (SWL) **الحمل الدراسي للطالب محسوب لـ 15 اسبوعا**			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	65	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**143**		

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

Delivery Plan (Weekly Syllabus) **المنهاج الاسبوعي النظري**	
	Material Covered
Week 1	Carbohydrate metabolism (digestion, absorption)
Week 2	Anaerobic oxidation, calculation energy
Week 3	Lipid metabolism (digestion) and absorption acids bile salts,
Week 4	The Fatty Acid Oxidation, Energetics of β-oxidation
Week 5	oxidation and energy calculation
Week 6	Protein metabolism, osmotic balance
Week 7	Digestion and absorption Proteins: transformations

Week 8	EXAM
Week 9	The chemistry of acids the amino in living tissues
Week 10	Products Final, (urea) to disintegrate amino acids in living tissue
Week 11-12	Hormones
Week 13	Sugar biosynthesis, Photosynthesis and synthesis disaccharides
Week 14	Sugar biosynthesis, Photosynthesis and synthesis disaccharide
Week 15	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) **المنهاج الاسبوعي للمختبر**	
	Material Covered
Week 1	Amino acids- Solubility test
Week 2	Ninhydrin Test
Week 3	Xanthoproteic test
Week 4	Mellon test
Week 5	Sakaguchi test
Week 6	Hopkins-Colé test
Week 7	EXAM
Week 8	Proteins -Biuret test
Week 9	Denaturation
Week 10	Precipitation using concentrated acid
Week 11	Precipitation by salts of heavy metals
Week 12	Precipitation by alkaline reagents
Week 13	Precipitation using organic solvents
Week 14	Precipitation using neutral salts
Week 15	EXAM

Learning and Teaching Resources **مصادر التعلم والتدريس**		
	Text	**Available in the Library?**
Required Texts	L Nelson, D., & Michael M, C. (2021). Lehninger Principles of Biochemistry 8th Edition.	Yes
Recommended Texts	Rodwell, V. W., Bender, D., & Botham, K. M. (2018). Harper's illustrated biochemistry. McGraw-Hill.	No
Websites	https://ocw.mit.edu/courses/5-111-principles-of-chemical-science-fall-2008/ https://ocw.mit.edu/courses/7-012-introduction-to-biology-fall-2004/download/	

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

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	**Bio-2415**				
ECTS Credits	**7**				
SWL (hr/sem)	**142**				
Module Level	2		**Semester of Delivery**	4	
Administering Department	Dept. of Biology		**College**	College of Science	
Module Leader	Zainab Mohammed Nsaif		**e-mail**	dr.zainab@uodiyala.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	PhD	
Module Tutor	Zainab Mohammed Nsaif		**e-mail**	dr.zainab@uodiyala.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	1/9/2024		**Version Number**	2	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Microbiology I	**Semester**	3
Co-requisites module		**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	Clinical microbiology deals with microorganisms such as pathogenic bacteria, viruses, fungi and parasites which are medically important and cause human diseases. Generally, microorganisms can cause a tremendous change on our planet and our life, there is a scientific speech says if "there is no microorganism on our earth there is no life on our planet" otherwise is also true because there are some dangerous and infectious microorganism which cause a dangerous airborne, foodborne and waterborne diseases that some of them are fatal and threaten human life. Evolution in the field of Clinical microbiology and exactly about identification of pathogenic microorganisms and the methods of chemotherapy and prophylaxes has saved the life of millions of peoples on our planet. Students will acquire a broad understanding of the basics of microbiology laboratories in terms of sterilization methods and the rules that must be adhered to when dealing with the tools and equipment used, in addition to using the laboratory techniques necessary to isolate these organisms and identify their shapes and characteristics. The student will also learn the techniques necessary to identify the types of these organisms and their groups, methods of counting, isolating and staining them.

	Course Objective: 1. To understand the basic principles of Clinical Microbiology. 2. To provide the student with the basic knowledge of microorganisms in general 3. To study the main characteristics of microbes of medical importance and their identification. 4. To teach aseptic techniques. 5. To provide an understanding of antimicrobial agents and infectious diseases. 6. To teach the basic immunological principles and methods for the study of immunological disorders.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**At the end of this module students should be able to:** ▪ Develop advanced academic knowledge about the concepts and principles of Medical Microbiology. ▪ Cover the importance of Microbiology and the history background of this subject. ▪ Detail knowledge about the Medical Microbiology and its applications. ▪ Having knowledge about the up-to-date advancing and development in this field of subject ▪ They could be familiar with the modest instruments in the medical labs like PCR and ELISA. ▪ In addition to learning practically the technique of examining, using, how to collect the differenttype of speciemns and how to prepare it for examinations and be familiar with the results and writing reports. ▪ Recognition the methods of sterilization in the laboratory. ▪ Tools and equipment used in the laboratory. ▪ Staining methods and types of dyes used to identify the types of microorganisms. ▪ Methods of counting bacteria. ▪ Techniques for the process of culturing on plates.
Indicative Contents المحتويات الإرشادية	The module will include: Class attendance is regularly 85-90% of lectures each week 5 minutes before the lecture is a must. The students should also submit homework and assignments, accomplish extra classroom requirements such as preparing scientific reports, presentation and seminars and also be ready for performing quizzes, mid-term and final exams, participate in the laboratory works (practical labs) in order to pass successfully. Basics of working in the laboratory. Methods of dealing with tools and equipment in the laboratory.

Learning and Teaching Strategies **استراتيجيات التعلم والتعليم**	
Strategies	Every student or small grouping students must prepare a report about a subject regarding clinical microbiology. Each report must include the following information: the logo of university or the Institute, the name of college or department, student's name, the title of the report, short description and brief introduction about the subject, aims of the report, short review literature, prospects and overviews and finally the references. Each student or small group is present his/her/there reports as a seminar (presentation) to confirm their capability to speak about a scientific subject in front of gathering in a teaching hall. All lessons held in the laboratory will be practical, with the participation of all students, who will be distributed into small groups to obtain the required results and encourage the spirit of competition among students and

	encouragement among groups to complete the experiment in the required manner.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	77	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	65	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**145**		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to Systemic Classification of Microorganisms
Week 2	Systematic Classification of Bacteria
Week 3	Systematic Classification of Fungi
Week 4	Systematic Classification of Algae
Week 5	First Exam
Week 6	Systematic Classification of Protozoa
Week 7	Microbes and Biogeochemical Cycling of Elements
Week 8	Introduction into Environmental Microbiology
Week 9	Introduction to Industrial Microbiology
Week 10	Introduction to medical microbiology and Immunity
Week 11	Introduction to immunology
Week 12	Review
Week 13	Second Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered

Week 1	Lab1 An introduction to microbiology, aseptic technique and safety
Week 2	Lab2 Tools and Equipment used in Microbiology Lab.
Week 3	Lab3 Culture Media
Week 4	Lab4 Bacterial Staining
Week 5	Lab5 Type of the Stains/ Differential stain
Week 6	Lab6 Selective stain
Week 7	Lab7 Antibiotics
Week 8	Mid exam
Week 9	Lab8 Bacterial Count
Week 10	Lab9 Turbidimetry Determinations:
Week 11	Lab10 Pour Plate Method
Week 12	Lab11 Bacterial Culture Techniques
Week 13	Lab12 Colony morphology
Week 14	Lab13 Yeast and molds
Week 15	Final exam

Learning and Teaching Resources **مصادر التعلم والتدريس**		
	Text	**Available in the Library?**
Required Texts	Dubey, R. C., & Maheshwari, D. K. (2023). A textbook of microbiology. S. Chand Publishing.	Yes
Recommended Texts	Green, L. H., & Goldman, E. (Eds.). (2021). Practical handbook of microbiology. CRC press. Parija, S. C. (2023). Textbook of microbiology and immunology. Berlin, Heidelberg, Germany: Springer.	Yes
Websites	https://microbiologyinfo.com/ https://microbe.net/resources/microbiology-web-resources/	

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.