

## نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة ديالى

الكلية\المعهد: العلوم

القسم العلمي: قسم التقانة الاحيائية

اسم البرنامج الاكاديمي او المهني: البكالوريوس

اسم الشهادة النهائية: بكالوريوس في التقانة الاحيائية

النظام الدراسي: الفصلي و نظام مسار بولونيا

تاريخ اعداد الوصف: 2024 \ 10 \ 20

تاريخ ملئ الملف: 2025 \ 1 \ 20

  
التوقيع:  
اسم المعاون العلمي: أ. د. منذر حمزة راضي  
التاريخ: 2025-01-20

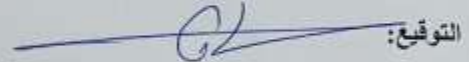
  
التوقيع:  
اسم رئيس القسم: أ. د. علياء معن عبد الحميد  
التاريخ: 2025-01-20

دقق الملف من قبل:

شعبة ضمان الجودة و الأداء الجامعي

اسم مدير شعبة ضمان الجودة و الأداء الجامعي: أ. م. غسان صبيح محمود

التاريخ:

  
التوقيع:

  
مصادقة السيد العميد  
أ. د. طه محمد حسن

**University of Diyala**  
**College of Science**  
**Department of Biotechnology**



**MODULES  
DESCRIPTION**

وصف المواد الدراسية

**First Cycle**

# Semester ONE

## MODULE DESCRIPTION FORM

## نموذج وصف المادة

Module Information			
معلومات المادة الدراسية			
Module Title	Principle of Biotechnology 1		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1101		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	1
Administering Department	Biotechnology	College	College of Science
Module Leader	Ziyad Kalouf Radeef	e-mail	<a href="mailto:zeyadkh.radeef@uodiyala.edu.iq">zeyadkh.radeef@uodiyala.edu.iq</a>
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

## Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
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## MODULES DESCRIPTION

<b>Co-requisites module</b>	None	<b>Semester</b>	
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### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- Bachelor course in biotechnology offers the synergism of basic concepts of biology, biotechnology, molecular biology, genomics, Recombinant DNA technology, microbiology, biochemistry and bioinformatics with technological applications.</li> <li>2- The main objective of this degree course is to produce graduates with enhanced skills, knowledge and research aptitude to carry out higher studies, entrepreneurship or research and development in the various health, research and industrial areas.</li> <li>3- Develop proficiency in application of current aspects of biotechnology, molecular biology, Recombinant DNA technology, bioinformatics and genomics.</li> <li>4- Students will be able to use state of the art techniques relevant to academia and industry, generic skills and global competencies including knowledge and skills that enable the students to undertake further studies in the field of biotechnology, molecular biology, Recombinant DNA technology, genomics, microbiology, biochemistry or any other related field.</li> <li>5- Imparting an education that includes communication skills, the ability to work in a team with leadership quality, devoted to societal problems with an ethical attitude.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- Prepares the students for immediate entry to the workplace with sound theoretical, experimental knowledge in the area of health and pharmaceuticals, biochemicals, biofuels, environment related, food and dairy, cosmetics, biopolymers and related multidisciplinary fields.</li> <li>2- Overall, the course offers basic foundation in biotechnology which enables the students to understand the concepts in biochemistry, molecular biology, microbiology, genetic engineering and related industrial technology.</li> <li>3- Students will be able to design, execute, record and analyse the results of experiments in field of molecular biology, genomics, Recombinant DNA technology, biochemistry, microbiology and genetic engineering.</li> <li>4- Students will be able to work effectively in a group in the classroom,</li> </ol>

## MODULES DESCRIPTION

	<p>laboratory, industries and fieldbased situations.</p> <p>5- Become efficient in using standard operating procedures and will be well versed with the regulations for safe handling and use of chemicals as well as IPR and biosafety issues related to experiments in field of biochemistry, microbiology and genetic engineering.</p>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<p><b>Strategies</b></p>	<p>Teaching/learning methods and strategies Lectures and practical classes provide the basic knowledge. A variety of coursework gives opportunities for extending knowledge and techniques. Individual and group projects reinforce techniques and give experience of practical applications. The programme topics are introduced by lectures but are developed fully by appropriate laboratory exercises during all parts of the programme. Students are required to work both as individuals and as part of groups.</p>
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<p><b>Structured SWL (h/sem)</b></p> <p>الحمل الدراسي المنتظم للطالب خلال الفصل</p>	94	<p><b>Structured SWL (h/w)</b></p> <p>الحمل الدراسي المنتظم للطالب أسبوعيا</p>	6.26
<p><b>Unstructured SWL (h/sem)</b></p> <p>الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	81	<p><b>Unstructured SWL (h/w)</b></p> <p>الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	5.4
<p><b>Total SWL (h/sem)</b></p> <p>الحمل الدراسي الكلي للطالب خلال الفصل</p>	175		

## MODULES DESCRIPTION

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, 4 and 6
	Assignments	2	10% (10)	2, 12	LO # 3, 4 and 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 6
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Definition of the concept of biotechnologies
Week 2	Historical development of biotechnology before and after the World War
Week 3	Methods used to isolate microorganisms from the elements of the environment and types of nutritional requirements for them.
Week 4	Productive and enriching food media
Week 5	Different growth phases of bacteria and molds

## MODULES DESCRIPTION

<b>Week 6</b>	Culture media used in Biotechnological processes (Media components, optimization and sterilization)
<b>Week 7</b>	The effect of some factors on the growth and production of microorganisms such as heat, pH, Co <sub>2</sub> , light and some chemicals
<b>Week 8</b>	<b>Mid Exam</b>
<b>Week 9</b>	Types of tissue cultures such as meristems, callus and protoplast cultures
<b>Week 10</b>	Types of secondary metabolism and active compounds in the plant
<b>Week 11</b>	Determine the different levels in the production of biological materials such as laboratory level, experimental laboratory and industrial production
<b>Week 12</b>	Second exam
<b>Week 13</b>	Definition of industrial fermentors, materials used in their manufacture and factors affecting them
<b>Week 14</b>	Batch culture
<b>Week 15</b>	Continuous Farms

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab 1: Laboratory Equipment's
<b>Week 2</b>	Laboratory Equipment's (practically)
<b>Week 3</b>	Lab 2: Microorganism's growth requirements and culture media
<b>Week 4</b>	Microorganism's growth requirements and culture media(practically)
<b>Week 5</b>	Lab 3: The Isolation of Microorganisms from a different environments by a different techniques

## MODULES DESCRIPTION

<b>Week 6</b>	The Isolation of Microorganisms from a different environments by a different techniques(practically)
<b>Week 7</b>	Lab 4: Maintaining and preserving pure cultures
<b>Week 8</b>	Maintaining and preserving pure cultures(practically)
<b>Week 9</b>	Lab 5: The enumeration methods of Microorganisms
<b>Week 10</b>	The enumeration methods of Microorganisms(practically)

### Learning and Teaching Resources

#### مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	<ul style="list-style-type: none"> <li>Smith, J. E. (2009). <i>Biotechnology</i> (5th ed.). Cambridge: Cambridge University Press.</li> <li>Microbiology and Biotechnology (2001)</li> <li>A Text book of Biotechnology(2006)</li> </ul>	
<b>Recommended Texts</b>	<ul style="list-style-type: none"> <li>Gupta, V., Sengupta, M., Prakash, J., &amp; Tripathy, B. C. (2017). <i>Basic and applied aspects of biotechnology</i>. Springer Singapore.</li> <li>Crawford, C. (2018). <i>Principles of biotechnology</i>. 1st ed. New York: Salem Press.</li> <li>Patnaik, B. (2012). <i>Textbook of biotechnology</i>. New Delhi: Tata McGraw Hill Education.</li> <li>Dubey, R. C. (2014). <i>A textbook of Biotechnology</i>. S. Chand Publishing.</li> <li>Khan, F. A. (2020). <i>Biotechnology fundamentals</i>. CRC Press.</li> </ul>	
<b>Websites</b>		

### Grading Scheme

## MODULES DESCRIPTION

### مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group</b> <b>(50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
	<b>C - Good</b>	جيد	70 - 79	Sound work with notable errors
	<b>D - Satisfactory</b>	متوسط	60 - 69	Fair but with major shortcomings
	<b>E - Sufficient</b>	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group</b> <b>(0 – 49)</b>	<b>FX – Fail</b>	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	<b>F – Fail</b>	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	General Biology 1		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1102		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	1
Administering Department	Biotechnology	College	College of Science
Module Leader	Alyaa Maan Abd Alhameed	e-mail	<a href="mailto:alyaa.maen@uodiyala.edu.iq">alyaa.maen@uodiyala.edu.iq</a>
Module Leader's Acad. Title	Professor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	1/06/2024	Version Number	1.0

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

## MODULES DESCRIPTION

<b>Module Aims, Learning Outcomes and Indicative Contents</b> أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. Finding new ways to produce enough nutritious food for a growing world population.</li> <li>2. Breeding plants to tolerate the heat- and drought-stress caused by climate change.</li> <li>3. Developing sustainable cropping practices to produce healthful food while protecting the environment.</li> <li>4. Investigating new methods to fight plant diseases.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>1. To study about some biology terms, biology discipline, and botany discipline, the difference between Prokaryotic and Eukaryotic cells.</li> <li>2. Study the planet cell.</li> <li>3. Eukaryotic cell organelles, structure, composition and functions.</li> <li>4. Understand the fundamental concept of the cell cycle, Mitosis, and its various stages, Meiosis, and its different phases.</li> <li>5. Mendel's Laws of Inheritance.</li> <li>6. Plant Tissues types.</li> <li>7. Types of Root and Stem System of the plant.</li> <li>8. Absorption of mineral salts of plant.</li> <li>9. Translocation of organic solutes.</li> <li>10. Growth and Growth hormones.</li> </ol>
<b>Indicative Contents</b> المحتويات الإرشادية يتضمن الكلمات المفتاحية المهمة للمحاضرات	<p>Indicative content includes the following.</p> <ol style="list-style-type: none"> <li>1- Introduction to the General Biology of Plant – morphology, Taxonomy, physiology, anatomy, Genetics, behavior, origin and distribution</li> <li>2- Study the planet cell – cell wall, cell membrane , protoplast, phragmoplast , middle- lamella.</li> <li>3- Cell Organelles – Plastid, leucoplast, chromoplast, chloroplast, stroma, etioplast, mitochondria.</li> <li>4- Other Cell Organelles – Ribosomes, Endoplasmic reticulum, polysome, Golgi bodies, Lysosome, spherosome, glyoxysome, peroxisome, cytoskeleton, Microelements.</li> <li>5- Microtubules - Intermediate filaments, Ergastic substances, Vacuole, Nucleus, Protoplasm .</li> <li>6- Cell cycle – Mitosis, Meiosis, M phase, cytokinesis, Cyclins and cyclin-dependent protein kinases.</li> <li>7- Mendel's Laws of Inheritance – Segregation, Monohybrid cross, Genotype, Phenotype, homozygous, dominant, Trait, recessive.</li> <li>8- Plant Tissues types – Meristematic Tissues, Permanent Tissues, Simple Permanent Tissues, Parenchyma, Collenchyma, Sclerenchyma, Epidermis, Complex Permanent Tissue, Xylem, Phloem .</li> </ol>

## MODULES DESCRIPTION

	<p>9- Types of Root System – Adventitious Roots, Taproot Roots, Assimilatory roots, Reproductive roots, Root-thorns, Floating roots, Buttress roots, Climbing roots, Contractile roots, Stilt roots, Prop roots.</p> <p>10- Stem System – Nodes, Internodes, Terminal or apical bud, Lateral or axillary bud, petiole , pedicel, leaves , flowers, Seeds, Monocots, Dicots.</p> <p>11- Absorption of mineral salts of plant – Ions, Contact Exchange, Carbonic acid Exchange, active absorption, Carrier Concept, Isotopic, saturation effects specificity.</p> <p>12- Mineral Nutrition of the Plant –Osmotic Pressure , Catalytic Function, Antagonistic , Balancing Function.</p> <p>13- -Translocation of organic solutes –Downward Translocation, Upward Translocation, Radial Translocation, Protoplasmic Streaming, Interfacial Flow Hypothesis, Active Diffusion. .</p> <p>14- -Factors Controlling Translocation –Sink Active, Photosynthesis, Turgor Pressure, Phytohormones, Plasmodesmata.</p> <p>15- Respiration –Oxidation , Carbohydrate, anaerobic respiration, Metabolism.</p> <p>16- Growth and Growth hormones – Auxin, Cytokinins, Sigmoid Curve, Plant Hormones.</p>
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

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

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	94	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	6.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.4
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	175		

## MODULES DESCRIPTION

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 3, 5 , 8 and 12
	Assignments	2	10% (10)	2, 12	LO # 2, 4, 6 and 9
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 3, 5, 6 and 9
Summative assessment	Midterm Exam	2 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
Week 1	Introduction to the General Biology of Plant
Week 2	Study the planet cell
Week 3	Cell Organelles
Week 4	Microtubules
Week 5	Cell cycle
Week 6	Mendel's Laws of Inheritance
Week 7	Plant Tissues types
Week 8	The Midterm Exam
Week 9	Types of Root System
Week 10	Absorption of mineral salts of plant
Week 11	Mineral Nutrition of the Plant
Week 12	Translocation of organic solutes
Week 13	Factors Controlling Translocation
Week 15	Respiration
Week 16	Growth and Growth hormones

## MODULES DESCRIPTION

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction: Branches of botany
Week 2	Lab 2: The solutions : Types of solutions
Week 3	Lab 3: The Light microscope: Experiment: Study onion cells by microscope.
Week 4	Lab 4: Plant Cell Structure.
Week 5	Lab 5: Plant pigments.
Week 6	Lab 6: Cell Division.
Week 7	Lab 7: Mendel's Laws Examples.
Week 8	Lab 8: Plant tissue.
Week 9	Lab 9: Flower of plant.
Week 10	Lab 10: Seeds of plant.
Week 11	Lab 11: Diffusion, Osmosis and Imbibition.
Week 12	Lab 12: Transpiration.
Week 13	Lab 13: The Plant Hormones.

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Pollard, T. D., Earnshaw, W. C., Lippincott-Schwartz, J., & Johnson, G. (2022). Cell biology E-book. Elsevier HealthSciences.	Yes
Recommended Texts		
Websites	PRINCIPLES OF PLANT BIOTECHNOLOGY ICAR eCourse / 2015	

### Grading Scheme

## MODULES DESCRIPTION

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

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## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
<b>Module Title</b>	Analytical chemistry	<b>Module Delivery</b>	
<b>Module Type</b>	Support	<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
<b>Module Code</b>	BIOT-1103		
<b>ECTS Credits</b>	5		
<b>SWL (hr/Sem)</b>	175		
<b>Module Level</b>			
<b>Administering Department</b>	Chemistry department	<b>College</b>	College of Science
<b>Module</b>	Mohamed Jabar Mohamed	<b>e-mail</b>	mohammedjabbar0908@gmail.com
<b>Module Leader's Acad. Title</b>	Lecturer	<b>Module Leader's Qualification</b>	Ph.D.
<b>Module Tutor</b>		<b>e-mail</b>	E-mail
<b>Peer Reviewer Name</b>	Name	<b>e-mail</b>	E-mail
<b>Scientific Committee Approval Date</b>	01/06/2024	<b>Version Number</b>	0.1

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

## MODULES DESCRIPTION

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<p><b>Module Aims</b> أهداف المادة الدراسية</p>	<p>This module aims to cultivate a scientifically literate generation that embraces science as a foundation for transformative change, applying scientific knowledge and methods in critical thinking, analysis, and adaptation to evolving technologies and societal needs</p> <p>This module will be included the main points:</p> <ol style="list-style-type: none"> <li>1- Introduce students to the fundamental principles of volumetric analysis</li> <li>2- Foster an understanding of the theoretical principles and practical applications of titration.</li> <li>3- To ensure a comprehensive understanding of gravimetric analysis, calculations of gravimetric coefficients, studying the calculations of solubility product constants and determining the mathematical conditions for sediment formation.</li> <li>4- Identify some instrument devices used in quantitative analysis</li> </ol>
<p><b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. <b>weight of substances in samples, including the preparation of solutions from solid or liquid materials.</b></li> <li>2. <b>Provide students with a comprehensive knowledge of volumetric analysis, particularly titration, and its wide range of applications.</b></li> <li>3. <b>Identify the types of acids, bases, ionization constants, and pH function calculations, as well as identify the acidic and basic properties of water and the ionization constant (Kw).</b></li> <li>4. <b>Identify the hydrolysis of salts and its calculations</b></li> <li>5. <b>Familiarize students with the fundamentals of Bufer solutions and its calculations</b></li> <li>6. <b>Identify the basics of gravimetric analysis</b></li> <li>7. <b>Studying the calculations of the solubility product constant and knowing when sediments form mathematically.</b></li> <li>8. <b>Study the characteristics of the sediment and the factors affecting the solubility of the sediment, as well as the study of the factors that affect the formation of the sedimen</b></li> <li>9. <b>Understand molecular spectroscopy in terms of principles and theoretical basis.</b></li> </ol>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <ol style="list-style-type: none"> <li>1- Methods for expressing the concentration of solutions</li> <li>2- volumetric analysis, particularly titration,</li> <li>3- Calculations of pH for acids, bases, salts and buffer solutions</li> <li>4- Gravimetric analysis and calculations of the solubility product constant</li> <li>5- Instrument devices used in quantitative analysis</li> </ol>

## MODULES DESCRIPTION

<b>Learning and Teaching Strategies</b>	
استراتيجيات التعلم والتعليم	
<b>Strategies</b>	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.

<b>Student Workload (SWL)</b>			
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	94	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	6.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال	81	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب	5.4
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>175</b>		

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

## MODULES DESCRIPTION

Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> 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

## MODULES DESCRIPTION

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
Week 1	Lab safety
Week 2	Laboratory equipments
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
Week 8	Preparation of (0.1 N ) NaOH solution and standardization with (0.1
Week 9	Preparation of (0.1 N ) HCL solution and standardization with sodium
Week 10	Determination of carbonate and bicarbonate in mixture
Week 11	Determination acidity of Vineger
Week 12	Determination of hardness of water
Week 13	Preparation and standardization of (0.1 N ) AgNO <sub>3</sub> solution
Week 14	Determination of chloride according to modified Volhard method

## MODULES DESCRIPTION

<b>Week 15</b>	Complex formation reactions
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Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
1	Skoog (Fundamentals of Analytical Chemistry) 9 edition (Thomson, 2014)	
2	Daniel harris (Quantitative chemical analysis ) (2006)	
3	Gary D. Christian (Analytical Chemistry ) 7th Ed, 2014	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group</b> (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
<b>Fail Group</b> (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

## MODULES DESCRIPTION

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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

Module Information			
معلومات المادة الدراسية			
Module Title	Biophysics		Module Delivery
Module Type	Support		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1104		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	1	Semester of Delivery	
Administering Department	Physics Department	College	College of Science
Module Leader	Raghd Talal	e-mail	<a href="mailto:raghadtalal@uodiyala.edu.iq">raghadtalal@uodiyala.edu.iq</a>
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

## Relation with other Modules

## العلاقة مع المواد الدراسية الأخرى

Prerequisite module	None	Semester	
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## MODULES DESCRIPTION

<b>Co-requisites module</b>	None	<b>Semester</b>	
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### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Teaching students the basic principles of physics.</li> <li>2. Preparing specialists in the field of general physics and its practical applications, which bears the responsibility of studying the country's need for development and progress and capable of meeting the needs of the job market in state institutions and industry sectors.</li> <li>3. Preparing an educated generation armed with science and adopts it as a sound basis to bring about radical changes and assign scientific knowledge and scientific methods in thinking, analysis and adaptation with the development of technologies, to keep up with the expansion of human needs.</li> <li>4. Effective contribution for deepening and documenting the connection of the university with the society through the implementation of advisory counseling, training and development of teaching and administrative staff.</li> <li>5. The service of preparing graduates specialized in physics who contribute to development in the country.</li> <li>6. Meeting the needs of various sectors with highly qualified personals in the field of physics.</li> <li>7. Encouraging the distinguished in this field to work as teaching assistants in the department to be part of the academic teaching staff in the future.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- enable students to obtain knowledge and understanding of the concept of physics.</li> <li>2- Enable students to obtain knowledge and understanding of the scientific laws of physics.</li> <li>3- Enable students to keep pace with scientific development in all scientific fields of physics.</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>This course contains a lot of vocabulary, which is a branch of physics concerne and properties of matter and energy.</p> <p>It includes an introduction to understanding natural phenomena, the forces and affecting their course, and the formulation of knowledge into laws that do not on aforementioned processes, but also predict the course of natural processes with gradually approach reality.</p> <p>The topic of general physics includes an introduction to physics, vector analysis in linear motion, circular motion, and rotational motion. Also, gravitational for torque, angular momentum, laws of motion with constant or uniform accelerate rotational motion, dynamic fluids, static fluids, particle stability, electric charge and electric potential in electrical circuits and ray optics.</p>

## MODULES DESCRIPTION

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

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

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.06
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125		

### Module Evaluation

#### تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Quizzes	2	10% (10)	5, 10	LO #1, 2, 4 and 6

## MODULES DESCRIPTION

Formative assessment	Assignments	2	10% (10)	2, 12	LO # 3, 4 and 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 6
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

#### المنهاج الاسبوعي النظري

	Material Covered
<b>Week 1</b>	A brief summary of the vectors, scalar and vector quantities, addition of vectors, unit vector, component of vectors, dot product and cross product. With examples for all these topics.
<b>Week 2</b>	Motion on a straight line: Displacement, Average velocity, Instantaneous velocity, Average acceleration, and Instantaneous acceleration. With examples for all these topics.
<b>Week 3</b>	Application of Motion with a constant acceleration: Freely falling bodies, and Projectile of motion. With examples for all these topics.
<b>Week 4</b>	Equilibrium of a particle: Understanding of forces, Newton's first law, Newton's second law, Newton's third law, and mass and weight. With examples for all these topics.
<b>Week 5</b>	Friction force, inclined plane, Torque of force, Center of gravity of the body, Center of mass, Motion of a system of particle, and Newton's law of universal gravitation. With examples for all these topics
<b>Week 6</b>	Circular and Rotational motion: Motion in a circle, uniform circular motion, central or radial force, non-uniform circular motion, Central or radial acceleration, Central force, tangential acceleration, and tension in circular motion. With examples for all these topics.
<b>Week 7</b>	Rotational motion, angular displacement, angular velocity, and angular acceleration. With examples for all these topics.
<b>Week 8</b>	<b>Midterm exam</b>
<b>Week 9</b>	Rotational motion with a constant angular acceleration, relation between angular and linear velocity and acceleration, torque, angular acceleration, and moment of inertia. With examples for all these topics.

## MODULES DESCRIPTION

<b>Week 10</b>	Elasticity: The stress and strain, elastic modulus, Hook's law, tensile and compressive stress and strain, Young's modulus, bulk stress and strain, bulk modulus, compressibility, shear stress and strain, Poisson's ratio, and force constant. With examples for all these topics.
<b>Week 11</b>	Static fluids: Density, specific gravity, pressure in a fluid, atmospheric pressure, pressure-depth-Pascal's law, buoyancy, Archimedes principle, and define the surface tension. With examples for all these topics.
<b>Week 12</b>	Dynamic fluids: Ideal fluid, the continuity equation, Bernoulli's equation, Venturi meter, and define the viscosity. With examples for all these topics.
<b>Week 13</b>	Electric charge and electric field: Conductor, insulator, and induced charges. Coulomb's law, electric field, intensity of electric field, electric potential energy, electric potential energy in a uniform field, electric potential energy of two point charges, potential difference, potential gradient, equipotential surfaces, and electric potential. With examples for all these topics.
<b>Week 14</b>	Geometric optics: Nature and propagation of light, wave front, properties of light, types of reflection, index of refraction, laws of reflection and refraction, total internal reflection, real and apparent depth, refraction by prism.
<b>Week 15</b>	mirrors & lenses: Spherical mirrors, image formations, spherical aberration, types of simple lenses, converging lens, diverging lens, properties of lenses, image formation by thin lenses,

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Moment of inertia for flywheel
<b>Week 2</b>	Simple pendulum
<b>Week 3</b>	Surface tension
<b>Week 4</b>	Speed of sound
<b>Week 5</b>	Glass refractive index
<b>Week 6</b>	diffraction grating
<b>Week 7</b>	Equilibrium forces
<b>Week 8</b>	<b>Midterm exam</b>

## MODULES DESCRIPTION

<b>Week 9</b>	Ohm's law
<b>Week 10</b>	Viscosity
<b>Week 11</b>	Wheatstone bridge
<b>Week 12</b>	inclined plane
<b>Week 13</b>	Archimedes principle
<b>Week 14</b>	focal length of the lens
<b>Week 15</b>	standing waves

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Fundamental of Physics (Halliday, Resnick, and Walker).	Yes
<b>Recommended Texts</b>		
<b>Websites</b>		

### Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
	<b>C - Good</b>	جيد	70 - 79	Sound work with notable errors
	<b>D - Satisfactory</b>	متوسط	60 - 69	Fair but with major shortcomings

## MODULES DESCRIPTION

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	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group</b> <b>(0 – 49)</b>	<b>FX – Fail</b>	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	<b>F – Fail</b>	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

MODULES DESCRIPTION

نموذج وصف المادة

Module Information			
معلومات المادة الدراسية			
Module Title	Democracy and Human Right		Module Delivery
Module Type	Support		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UNI-1105		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	1
Administering Department	Biotechnology	College	College of Science
Module Leader		e-mail	
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2024	Version Number	1.0

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

**Module Aims, Learning Outcomes and Indicative Contents**

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- This course deals with the basic concept of human rights&amp; democracy</li> <li>2- Clarifying and training students on the most important principles of human rights and democracy.</li> <li>3- Organizing discussions and presentations on the most vital and basic topics affecting community building, related to human rights and democracy..</li> <li>4- Adopting teamwork with students to develop their cognitive abilities and create a spirit of cooperation, initiative, creativity and exchange of views in an effort to build the foundations of peaceful community coexistence.</li> <li>5- Providing society with conscious youth aware of the importance of its role in building society, its unity and cohesion through spreading the culture of human rights and establishing the rules of correct democracy</li> <li>6- Human rights guarantee the protection and respect of an individual's interests, even when he or she is not a majority. In a democratic climate, sustainable democratic power cannot be conceived without respecting, protecting and fulfilling human rights. Through their combined influence, they allow the individual a life based on the freedom of self-determination and collective. That is why the protection and realization of human rights truly form the basis of the democratic project.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p><b>Cognitive goals.</b></p> <ol style="list-style-type: none"> <li>1- Educate students and inform them about the importance of human rights and democracy.</li> <li>2- Recognize and understand the methods of teamwork for the exchange of ideas and creative discussions</li> <li>3- Developing students' performance through guidance in preparing mini-research on modern vocabulary on vital topics related to human rights and democracy.</li> <li>4- Providing students with creative development abilities in modern proposals and creative developmental ideas by discussing awareness videos presented on electronic classes.</li> <li>5- Developing the skills of sharing opinions and ideas and respecting others opinion.</li> </ol> <p><b>Objective Skills :</b></p> <ol style="list-style-type: none"> <li>1- Basic knowledge in the principles of human rights and democracy. Building the innovative personality of knowledge through onlineresearch and the transfer and exchange of information.</li> <li>2- Discuss the various properties about everything related to humanrights and their importance in our daily lives.</li> <li>3- Identify everything related to democracy and the foundations ofthe performance of the electoral process and its importance in building the nation.</li> </ol>

## MODULES DESCRIPTION

	4- Identify the capacitor and inductor phasor relationship with respect to voltage and current
<b>Indicative Contents</b> المحتويات الإرشادية	<ul style="list-style-type: none"><li>• Developing the student's analytical and critical skills regarding the reality and future of human rights and democracy</li><li>• Training the student on the importance of active participation in aspects of public life, such as promoting respect for the principles of public human rights and active participation in political and cultural life.</li><li>• Enable students to understand the importance of education and its role in spreading the culture of human rights and democracy in building a civilized society based on good governance, the most important component of which is belief in human rights, education and active participation in governance through free and fair elections</li></ul>

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	<p>The main strategy that will be adopted in delivering this module is to encourage students' participation in the discussions, dialogues and group work lectures &amp; exercises, while at the same time refining and expanding their critical thinking skills. There are many teaching and learning methods used, and the most important of these methods are: Theoretical lecture, discussion and dialogue, panel discussions on certain topics, theoretical student research</p> <p>Library and electronic activities (which helps students to reach the following results:</p> <ol style="list-style-type: none"><li>1- The scientific ability to distinguish between correct information and wrong information.</li><li>2- Ease of scientific drafting and ease of correction.</li><li>3- Ability to memorize and guess.</li><li>4- The ability to link concepts and principles with reality.</li><li>5- Ability to invoke, link, interpret.</li></ol>
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### Student Workload (SWL)

## MODULES DESCRIPTION

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	33	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	2.2
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.13
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation					
تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	<b>Assignments</b>	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	<b>Attending lectures</b>	1	1%	1.5	41#15 weeks
	<b>Report</b>	1	10% (10)	13	LO # 5, 9 and 10
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	8	LO # 1-7
	<b>Final Exam</b>	2hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

## MODULES DESCRIPTION

<b>Delivery Plan (Weekly Syllabus)</b>	
المنهاج الاسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	Familiarity with the concept of human rights and the definitions approaching it, discussing, dismantling and criticizing them in a scientific way in order to reach the most accurate and objective. - Definition of right , of human, of the concept of human rights. Human rights qualities, Types of human rights Human Rights Categories
<b>Week 2</b>	The historical development of human rights: Orcagina Reforms 1- Urnamo Law.2- The law of Ishtar Bit. 3- The law of the Kingdom of Eshnuna.4- Code of Hammurabi.
<b>Week 3</b>	Human rights in other ancient civilizations: 1- Indian and Chinese civilization 2- Pharaonic civilization of Egypt 3- Greek civilization 4- Roman civilization
<b>Week 4</b>	Human rights in heavenly laws Human Rights in Judaism, Human rights in Christianity, Human Rights in Islam.
<b>Week 5</b>	Human rights in Renaissance - modern and contemporary societies Introducing the student to the most important UN document in the field of human rights, which was approved and approved by the Assembly on January 10, 1948 Universal Declaration of Human Rights 1948.
<b>Week 6</b>	Non-governmental organizations defending human rights: Amnesty International, b. International Committee of the Red Cross. Arab Organization for Human Rights.
<b>Week 7</b>	Definition of the phenomenon of administrative corruption, Types of administrative corruption, Causes of administrative corruption. The repercussions of the phenomenon of administrative corruption on human rights and society. Successful treatments to combat corruption and protect society from it.
<b>Week 8</b>	Introduction - Historical development of the concept of <b>democracy</b> , definition of democracy, freedom. The difference between freedom and democracy, The relationship between the rights and public freedoms of individuals and democracy, Islamic views in a democratic system of government , Shura and Democratic System
<b>Week 9</b>	Specifications and duties of the Islamic ruler reading, The era of Imam Ali "peace be upon him" to his governor over Egypt: Specifications of the Islamic ruler: First: The moral and doctrinal components of the ruler Second: The general culture of the Islamic ruler, Third: Acumen and good choice: -Fourth: Direct relationship with people: Fourth: Direct relationship with people. Duties of the Islamic ruler: First: Social Reform: Second: Achieving security and defense Third: The architecture of the country "economic development"
<b>Week 10</b>	Forms of democracy: (1): Direct democracy ,(2): Semi-direct democracy , (3): Parliamentary democracy (parliamentary representation)4): Liberal Democracy

## MODULES DESCRIPTION

	(5): consociation Democracy, (6): Delegated Democracy.
<b>Week 11</b>	Conditions for the success of the elements and pillars of the democratic system General conditions for the success of the democratic system: 1. Respect for human rights, 2. Political pluralism 3. Peaceful transfer of power 4. Political equality 5. Respect the principle of the majority 6. Existence of the rule of law.
<b>Week 12</b>	Components or elements of democracy: 1 – Citizenship 2- Political participation 3. Elections 4. MPs and Responsibility 5. Opposition 6- Separation of government and parliament 7- Constitutional legitimacy
<b>Week 13</b>	The concept of elections and their legal adaptation: First: The concept of election Second: Legal adaptation of the Election, Third: Conditions of Election, Fourth: Concepts of Elections, Fifth: Types of Electoral Systems. Assessing the Democratic System, Pros and advantages of the democratic system, Disadvantages and disadvantages of the democratic system, Implementing the democratic system in Iraq.
<b>Week 14</b>	Lobbyists: First: the concept and definition. Second: Types of pressure groups. Third: The methods of pressure groups that they use to achieve their goals. Fourth: Lobbying and Democracy.
<b>Week 15</b>	Final Exam

### Learning and Teaching Resources

#### مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Martyrdom verses from the Holy Quran Mohammed Al-Tarawneh et al., International Humanitarian Law, ICRC, Amman, 2005 Diamond Larry, Democracy: Its Development and Ways to Enhance It, translated by Fawzia Naji, Dar Al-Mamoun for Translation, Iraq, 2005.	Yes
<b>Recommended Texts</b>	journal.un.org Hadi, Riad Azabz. (2005). Human rights (evolving contents and protection) (Baghdad).	Yes
<b>Websites</b>	<a href="https://www.un.org/en/development/dhlpr/index.html">Universal Declaration of Human Rights   United Nations</a> <a href="https://sc.uobaghdad.edu.iq/?page_id=8415">https://sc.uobaghdad.edu.iq/?page_id=8415</a> <a href="https://www.youtube.com/@ansamalobidimanagerofhuman2891">https://www.youtube.com/@ansamalobidimanagerofhuman2891</a>	

## MODULES DESCRIPTION

### Grading Scheme

#### مخطط الدرجات

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

Module Information			
معلومات المادة الدراسية			
Module Title	English Language		Module Delivery
Module Type	Support		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	UNI-1106		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	1	Semester of Delivery	1
Administering Department	Biotechnology	College	College of Science
Module Leader	Shaymaa Hatam Abdulla		e-mail
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

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

## MODULES DESCRIPTION

Co-requisites module	None	Semester	
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### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<p>New Headway Beginner Plus is a Beginner course in English intended to provide students with the fundamentals of the language and a foundation at First Year students / college of science, moving towards a higher level of proficiency at this stage.</p> <p>1. Listening Objectives:</p> <ul style="list-style-type: none"> <li>• Understand and respond to basic greetings, introductions, and simple instructions.</li> <li>• Comprehend and extract information from short, simple spoken passages related to everyday topics.</li> <li>• Identify and understand common vocabulary and expressions in spoken English.</li> </ul> <p>2. Speaking Objectives:</p> <ul style="list-style-type: none"> <li>• Engage in basic conversations using simple greetings, introductions, and expressions related to personal information.</li> <li>• Ask and answer simple questions about personal details, daily routines, and familiar topics.</li> <li>• Participate in short dialogues and role-plays to practice communication skills.</li> </ul> <p>3. Reading Objectives:</p> <ul style="list-style-type: none"> <li>• Read and comprehend simple texts, such as signs, labels, short passages, and dialogues.</li> <li>• Recognize and understand basic vocabulary words and phrases in context.</li> <li>• Extract information from texts related to everyday situations and topics.</li> </ul> <p>4. Writing Objectives:</p> <ul style="list-style-type: none"> <li>• Write short sentences and paragraphs about personal information, experiences, and familiar topics.</li> <li>• Fill out basic forms with personal details, such as name, age, and nationality.</li> <li>• Write simple messages, notes, and emails related to everyday situations.</li> </ul> <p>5. Vocabulary and Grammar Objectives:</p> <ul style="list-style-type: none"> <li>• Acquire a basic vocabulary related to common topics, such as greetings, numbers, time, family, food, and everyday objects.</li> <li>• Understand and use basic grammatical structures, including present simple, present continuous, simple past, and basic question forms.</li> <li>• Recognize and use common prepositions, articles, and basic sentence structures.</li> </ul> <p>6. Cultural Awareness Objectives:</p> <ul style="list-style-type: none"> <li>• Develop an understanding of cultural customs and practices related to greetings, social norms, and everyday interactions in English-speaking countries.</li> </ul>
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## MODULES DESCRIPTION

	Gain exposure to cultural elements through reading or listening to texts about customs, traditions, and holidays.
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>By the end of the course, the students will be able to:</p> <ol style="list-style-type: none"> <li>1. Listening and Speaking Skills: <ul style="list-style-type: none"> <li>• Understand and respond appropriately to basic questions and statements.</li> <li>• Engage in simple conversations related to personal information, daily routines, and immediate surroundings.</li> <li>• Follow simple instructions and directions.</li> <li>• Develop basic pronunciation and intonation skills.</li> </ul> </li> <li>2. Reading Skills: <ul style="list-style-type: none"> <li>• Recognize and understand basic vocabulary words and phrases in simple texts.</li> <li>• Comprehend and extract information from short, simple texts such as signs, notices, and labels.</li> <li>• Understand basic sentence structures and common grammatical patterns.</li> </ul> </li> <li>3. Writing Skills: <ul style="list-style-type: none"> <li>• Write simple sentences and short paragraphs about personal information, experiences, and familiar topics.</li> <li>• Fill out simple forms and write basic personal information.</li> <li>• Write simple messages, notes, and emails related to everyday situations.</li> </ul> </li> <li>4. Vocabulary and Grammar: <ul style="list-style-type: none"> <li>• Acquire and use a basic range of vocabulary related to everyday topics, such as greetings, numbers, time, family, food, and common objects.</li> <li>• Understand and use basic grammatical structures, including present simple, present continuous, simple past, and basic question forms.</li> <li>• Recognize and use common prepositions, articles, and basic sentence structures.</li> </ul> </li> <li>5. Cultural Awareness: <ul style="list-style-type: none"> <li>• Develop an understanding of cultural customs and practices related to greetings, social norms, and everyday interactions in English-speaking countries.</li> <li>• Gain exposure to cultural elements through reading or listening to texts about customs, traditions, and holidays.</li> </ul> </li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<ol style="list-style-type: none"> <li>1- Use simple forms of polite expressions to establish basic social contact and to perform everyday functions including making requests and offers, conducting simple phone conversations, asking and telling time, giving simple directions, asking about price, ordering a meal, etc.</li> <li>2- Use a narrow range of positive and negative adjectives to describe objects,</li> </ol>

## MODULES DESCRIPTION

	<p>people and places.</p> <ol style="list-style-type: none"><li>3- Exchange information by forming and responding to simple questions.</li><li>4- Produce simple sentences using the correct word order and punctuation marks.</li><li>5- Use capital and lower case letters accurately in writing.</li><li>6- Construct a short guided paragraph on a familiar topic concerning home, family, friends and holidays.</li><li>7- Use the basic tenses including the present and past simple, a present continuous correctly.</li><li>8- Use the basic auxiliary verbs (am/is/are/was/were/can) and a range of regular and irregular verbs.</li><li>9- Demonstrate awareness of the essential grammatical features and functions including questions and negatives, plural nouns, frequency adverbs, possessives, pronouns and determiners.</li></ol>
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	<ol style="list-style-type: none"><li>1. Communicative Approach: Emphasize communicative activities that promote interaction among students. Encourage pair and group work, role-plays, and discussions to practice language skills in meaningful contexts.</li><li>2. Integrated Skills: Integrate the four language skills (speaking, listening, reading, and writing) in lessons to create a balanced approach to language learning. Provide opportunities for students to use and develop these skills simultaneously.</li><li>3. Vocabulary Expansion: Incorporate vocabulary-building exercises and activities throughout the course. Use real-life contexts, visuals, and practical examples to help students learn and remember new words.</li><li>4. Grammar Focus: Teach and reinforce grammar structures in a systematic and progressive manner. Provide clear explanations, examples, and practice exercises to ensure students understand and can apply the grammar rules correctly.</li><li>5. Authentic Materials: Include authentic texts, such as articles, newspaper clippings, songs, and videos, to expose students to real-world language usage. This helps develop their reading and listening comprehension skills and exposes them to cultural aspects of English-speaking countries.</li><li>6. Cultural Awareness: Integrate cultural topics and discussions into the lessons to foster cultural awareness and sensitivity. Encourage students to share their own cultural backgrounds and experiences to promote understanding and appreciation of diverse perspectives.</li></ol>
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## MODULES DESCRIPTION

	<p>7. Error Correction: Provide constructive feedback and error correction during speaking and writing activities. Help students identify and correct their mistakes, focusing on accuracy while encouraging fluency and self-expression.</p> <p>8. Technology Integration: Utilize technology tools, such as interactive whiteboards, online resources, and language learning apps, to engage students and enhance their language learning experience. Incorporate multimedia materials for listening and speaking practice.</p> <p>9. Regular Assessment: Assess students' progress regularly through quizzes, tests, and assignments. Provide timely feedback to guide their learning and address areas that need improvement.</p> <p>10. Individualization: Cater to the individual needs and learning styles of students. Offer differentiated tasks and activities to ensure all learners are appropriately challenged and supported.</p> <p>11. Cooperative Learning: Promote collaboration and teamwork among students through pair work, group projects, and peer feedback. This encourages active participation and a supportive learning environment.</p> <p>12. Review and Revision: Schedule regular review sessions to consolidate previously learned material. Encourage students to revise and practice independently, providing resources for self-study and additional practice.</p>
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### Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	33	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	2.2
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.13
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	50		

## MODULES DESCRIPTION

<b>Module Evaluation</b> تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	<b>Assignments</b>	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	<b>Attending lectures</b>	1	1%	1.5	41#15 weeks
	<b>Report</b>	1	10% (10)	13	LO # 5, 9 and 10
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	8	LO # 1-7
	<b>Final Exam</b>	3hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	Material Covered
<b>Week 1</b>	General introduction and the rules of how to speak English fluently?
<b>Week 2</b>	Week 2 Present simple and continuous tense.
<b>Week 3</b>	Week 3 Present perfect tense and its applications.
<b>Week 4</b>	Week 4 Past simple and continuous tense.
<b>Week 5</b>	Week 5 Past perfect tense and its applications.
<b>Week 6</b>	Week 6 Future simple and continuous tense.
<b>Week 7</b>	Week 7 Future perfect tense and its applications.
<b>Week 8</b>	Week 8 Auxiliary verbs

## MODULES DESCRIPTION

<b>Week 9</b>	Week 9 Prepositions
<b>Week 10</b>	Week 10 Irregular Verbs
<b>Week 11</b>	Week 11 Capitalization rules
<b>Week 12</b>	Week 12 Formal sentences and Informal sentences.
<b>Week 13</b>	Week 13 Narrative tenses
<b>Week 14</b>	Week 14 The Growing Popularity of Organic Food
<b>Week 15</b>	Week 15 Collective Wisdom of Ants

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Soars, John and Liz, (2011), New Headway Plus, Special Edition, Beginner Level, Oxford University Press.	Yes
<b>Recommended Texts</b>	New Headway Plus provides an integrated skills course with each unit divided into grammar, vocabulary, skills work and everyday English segments	Yes
<b>Websites</b>	Oxford University Press: The New Headway series is published by Oxford University Press. Visit their website at <a href="http://www.oup.com">www.oup.com</a> and search for "New Headway Plus, Special Edition, Beginner Level " or browse their English language teaching section for information on the course.	

### Grading Scheme

مخطط الدرجات

## MODULES DESCRIPTION

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

Module Information			
معلومات المادة الدراسية			
Module Title	Principle of Biotechnology 2		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1207		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	2
Administering Department	Biotechnology	College	College of Science
Module Leader	Ziyad Kalouf Radeef	e-mail	<a href="mailto:zeyadkh.radeef@uodiyala.edu.iq">zeyadkh.radeef@uodiyala.edu.iq</a>
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Principles of Biotechnology		Semester
			1

## MODULES DESCRIPTION

<b>Co-requisites module</b>	None	<b>Semester</b>	
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### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- To enable students to obtain knowledge and understanding the intellectual framwok, foundations and applications of biotechnology</li> <li>2- To enable students to obtain knowledge and understanding of industrial, environment and food microbiology.</li> <li>3- To enable students to obtain knowledge and understanding of genetics, genetic engineering and cytogenetics</li> <li>4- To enable students to obtain knowledge and understanding botany and animal tissues.</li> <li>5- To enable students to obtain knowledge and understanding of cytology and microbiology</li> <li>6- Found a mental and applications of biotechnology</li> <li>7- Isolation, purification and treatment of various biological molecules</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- Preparing specialists familiar with the basis of biotechnology (theoretically and practically) who are able to meet the needs of the labor market.</li> <li>2- Conduction scientific research and trying to keep with the scientific development of biotechnologies.</li> <li>3- Cooperate with state institution and the private sector by providing scientific consultation laboratory analysis in the fields of genetic, environment, industrial microbiology engineering.</li> <li>4- Encourage scientific research and providing students with basic skill in biotechnologies and their applications in all fields.</li> <li>5- Encourage the staff to participate in scientific forums inside and outside the country.</li> <li>6- Contribute to solve scientific problems in order to serve the national development planks.</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<ol style="list-style-type: none"> <li>1- Genetics and Biotechnology Evolutionary stages of biotechnologies</li> <li>2- Mutation</li> <li>3- Methods of transmitting genetic material (gene)</li> <li>4- Antibiotics</li> <li>5- Enzyme production</li> <li>6- Immobilization of Enzyme</li> <li>7- Solid-state fermentations</li> <li>8- Separation of biological products</li> <li>9- Bioseparation (purification of biomaterials)</li> <li>10- The relationship between the environment and biotechnologies</li> </ol>

## MODULES DESCRIPTION

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	Teaching students the basic foundations and principles of biotechnology related to the various directions of this field of knowledge in the sciences of industrial fermentation, genetic engineering, bioseparation, and how to exploit microbial, plant and animal cells in the production of materials of industrial or medical value to the consumer.
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	94	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	6.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.4
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	175		

### Module Evaluation

#### تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Quizzes	2	10% (10)	5, 10	LO #1, 2, 4 and 6

## MODULES DESCRIPTION

Formative assessment	Assignments	2	10% (10)	2, 12	LO # 3, 4 and 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 6
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

#### المنهاج الاسبوعي النظري

	Material Covered
<b>Week 1</b>	The concept of genetics, genetic engineering and categorical enzymes
<b>Week 2</b>	The concept of mutagenication types of physical and chemical mutagens
<b>Week 3</b>	Conjugation, phage transport and DNA manipulation technology
<b>Week 4</b>	The concept of antibiotics and microorganisms used in production
<b>Week 5</b>	First exam
<b>Week 6</b>	The concept of enzymes and microorganisms producing enzymes and their industrial and medical applications, Industrial production of enzymes
<b>Week 7</b>	The concept of restriction Enzyme restriction methods and their use
<b>Week 8</b>	MID EXAM
<b>Week 9</b>	The concept of solid state fermentations Microbiology feedstock used in SCP
<b>Week 10</b>	The concept of bioseparation and methods used in the extraction of biological materials

## MODULES DESCRIPTION

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<b>Week 11</b>	Precipitation with ammonium sulfate, alcohol and other methods
<b>Week 12</b>	Ion exchange Chromatography, gel filtration Chromatography and affinity Chromatography
<b>Week 13</b>	Second exam
<b>Week 14</b>	The concept of biological control and microorganisms used
<b>Week 15</b>	The concept of mining microorganisms used

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab 1: The Roles of Enzymes in Biotechnology
<b>Week 2</b>	The Roles of Enzymes in Biotechnology (practically)
<b>Week 3</b>	Lab 2: Enzyme purification by ammonium sulfate precipitation
<b>Week 4</b>	Enzyme purification by ammonium sulfate precipitation (practically)
<b>Week 5</b>	Lab 3: Immobilization of Enzymes
<b>Week 6</b>	Immobilization of Enzymes (practically)
<b>Week 7</b>	Lab 4: Production of Single cell protein from yeast
<b>Week 8</b>	Production of Single cell protein from yeast (practically)
<b>Week 9</b>	Lab 5: Antibacterial Activity of Ginger ( <i>Zingiber Officinale</i> ) Extract
<b>Week 10</b>	Antibacterial Activity of Ginger ( <i>Zingiber Officinale</i> ) Extract (practically)
<b>Week 11</b>	Lab 6: Solid state fermentation (SSF)

## MODULES DESCRIPTION

<b>Week 12</b>	Solid state fermentation (SSF) (practically)
<b>Week 13</b>	Lab 7: What is a restriction enzyme?
<b>Week 14</b>	What is a restriction enzyme? (practically)
<b>Week 15</b>	Final Exam

### Learning and Teaching Resources

#### مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	1- Microbiology and Biotechnology (2001) 2- A Text book of Biotechnology(2006)	Yes
<b>Recommended Texts</b>	1- Methods in Biotechnology (1997) 2- Biotechnology, Principles and Application (1988)	Yes
<b>Websites</b>	<a href="https://books.google.iq/books?id=K7kLyFX_qtUC&amp;printsec=frontcover&amp;source=gbs_e_summary_r&amp;cad=0#v=onepage&amp;q&amp;f=false">https://books.google.iq/books?id=K7kLyFX_qtUC&amp;printsec=frontcover&amp;source=gbs_e_summary_r&amp;cad=0#v=onepage&amp;q&amp;f=false</a>	

### Grading Scheme

#### مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
	<b>C - Good</b>	جيد	70 - 79	Sound work with notable errors
	<b>D - Satisfactory</b>	متوسط	60 - 69	Fair but with major shortcomings
	<b>E - Sufficient</b>	مقبول	50 - 59	Work meets minimum criteria

## MODULES DESCRIPTION

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<b>Fail Group</b>	<b>FX – Fail</b>	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
<b>(0 – 49)</b>	<b>F – Fail</b>	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

Module Information			
معلومات المادة الدراسية			
Module Title	General Biology 2		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1208		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	Semester of Delivery	2
Administering Department	Biotechnology	College	College of Science
Module Leader	Alyaa Maan Abd Alhameed	e-mail	<a href="mailto:alyaa.maen@uodiyala.edu.iq">alyaa.maen@uodiyala.edu.iq</a>
Module Leader's Acad. Title	sProfessor	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2024	Version Number	1.0

## Relation with other Modules

## العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Principles of Biotechnology	Semester	1
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## MODULES DESCRIPTION

<b>Co-requisites module</b>	None	<b>Semester</b>	
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### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. This course deals with the basic concept of Zoology.</li> <li>2. To understand the role of Zoology in the Biotechnology field.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>1. To know the general information about Zoology and its branches.</li> <li>2. Recognize the classification systems of the animal kingdom, and the main divisions and characteristics of each division and class with examples</li> <li>3. To understand the chemistry of life the components including lipids, and carbohydrates.</li> <li>4. To understand the chemistry of life the components including protein, and nucleic acid.</li> <li>5. To understand the animal cell structure and functions such as cell membrane, cytoplasm, mitochondria, and endoplasmic reticulum.</li> <li>6. To understand the animal cell structure and functions such as the nucleus, Golgi apparatus, cilia and flagella, centrioles, and cytoskeleton.</li> <li>7. To have knowledge about the main technique for an animal transport system.</li> <li>8. To know cell signaling and communication.</li> <li>9. Understanding the cell division including mitosis and meiosis.</li> <li>10. To understand some cell functions such as the Cellular Respiration</li> <li>11. Study animal disruption, revolution, and development.</li> <li>12. The evolutionary history of biological diversity Phylogenetic tree</li> <li>13. To understand the function of some organs in the animal system, for example, the digestive system.</li> <li>14. Recognize how animal cells can play a very important role in biotechnology.</li> <li>15. Recognize how animal models can play a very important role in biotechnology such as the production of biomaterials and other applications</li> </ol>
<b>Indicative Contents</b> المحتويات الإرشادية	<p>Indicative content includes the following:-</p> <ol style="list-style-type: none"> <li>1- Introduction, Zoology classification systems, How animal cells differ from plant, Morphology of fungi, Reproduction</li> <li>2- Important of fungi, Living mode of fungi, Cultivation of fungi, sexual and asexual reproduction in fungi.</li> </ol>

## MODULES DESCRIPTION

	<ol style="list-style-type: none"> <li>3- Classification of fungi, Division 1: Myxomycota, general characteristics, the classes involved in this division. (One example for each class).</li> <li>4- Division 2: Eumycota , general characteristics, Class 1,Chytridiomycetes and its classification, Class 2, Hyphochytridiomycetes.</li> <li>5- Division 2: Eumycota, Class 3: Oomycetes , general characteristics, and the classification of this class.</li> <li>6- Division 2: Eumycota, Class 4: Zygomycetes, general characteristics, Orders involved in this class. The role of some strains in production of biomaterials.</li> <li>7- Division 2: Eumycota, Class 5: Ascomycetes, general characteristics, Subclasses involved in this class. The role of some strains in production of biomaterials, food manufacturing, plant pathogens, Human pathogens.</li> <li>8- Division 2: Eumycota, Class 6: Basidiomycetes, general characteristics, Subclasses involved in this class. The role of some strains in production of enzymes such laccase, peroxidase, cellulose, Edible and poisoning mushroom.</li> <li>9- Division 2: Eumycota, Class 7: Deutromycetes, general characteristics, Subclasses involved in this class.</li> <li>10- Medical mycology Mycotoxins</li> </ol>
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	The main strategy that will be adopted in delivering this module is to encourage students' participation in the collection of different samples, media preparation. Isolation and primitive identification according to the acquired skills from the theoretical and practical information through lectures and Lab.
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	94	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	6.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	81	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.4
<b>Total SWL (h/sem)</b>	175		

## MODULES DESCRIPTION

الحمل الدراسي الكلي للطالب خلال الفصل	
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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, 4 and 6
	Assignments	2	10% (10)	2, 12	LO # 3, 4 and 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 6
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction, branches such as morphology, histology, cytology, physiology, genetics, ecology, and taxonomy
Week 2	Classification of Zoology including kingdom, phylum, class, order, family, genus, and species.
Week 3	Study the chemistry of life such as macromolecules and carbohydrates and lipids.
Week 4	Study the chemistry of life such as the structure and function of proteins and the structure of nucleic acid, DNA and RNA, the type of RNA.

## MODULES DESCRIPTION

<b>Week 5</b>	Cell membrane structure and components, cytoplasm, the cytoplasm structure, mitochondria and endoplasm reticulum
<b>Week 6</b>	Structure and function of cells such as of nucleus, Golgi apparatus, cilia, and flagella, centrioles, and cytoskeleton.
<b>Week 7</b>	Midterm exam
<b>Week 8</b>	Transport system in animals: cell -Plasma Membrane Functions,-Diffusion, Osmosis, Facilitated transport, Active transport, Endocytosis, and Exocytosis
<b>Week 9</b>	Type of cell signal, a cascade of signaling events, relay, integration and distribution of signal transducer, signaling pathways regulator and cellular function
<b>Week 10</b>	Mitosis and meiosis, prophase, metaphase, anaphase, telophase, the function of mitosis, development and growth, cell replacement, regeneration, meiosis I meiosis II.
<b>Week 11</b>	Study animal disruption, revolution, and development. Source of variation, modern synthesis, anatomy, fossils, direct observation, analogy, morphology, natural selection, population
<b>Week 12</b>	Phylogenetic tree, protist, protozoa, Protophyta, Molds.
<b>Week 13</b>	Animal cell application, gene therapy, drug screening, production of vaccine, production of therapeutic protein
<b>Week 14</b>	Animal model: drug pharmacological, disease resistance models, mutation induced models, stress induced model
<b>Week 15</b>	Final exam

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab 1: Introduction
<b>Week 2</b>	Lab 2: -Microscope Parts and functions
<b>Week 3</b>	Lab 3: Functions of cell membrane-Composition of cell membrane.

## MODULES DESCRIPTION

<b>Week 4</b>	Lab 4: Methods of transport across membranes, Diffusion, Osmosis, Facilitated transport, Aactive transport, Endocytosis and Exocytosis
<b>Week 5</b>	Lab 5: The stages of mitosis, Why use onion roots for viewing mitosis? Viewing Chromosomes
<b>Week 6</b>	Lab 6: cell respiration
<b>Week 7</b>	Lab 7: Phylogenetic tree, protist, protozoa, Protophyta, Molds.
<b>Week 8</b>	Lab 8: Animal cell application, gene therapy, drug screening, production of vaccine, production of therapeutic protein
<b>Week 9</b>	Lab 9: Animal model: drug pharmacological, disease resistance models, mutation induced models, stress induced model
<b>Week 10</b>	Lab 10: final exam

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	1- M. Koto-The. Biology of biodiversity-Springer 2- E.O. Wilson-Biodiversity-Academic Press Washington. 3- G.G.-Simpson-Principle of animal taxonomy OxfordIBH Publication company.	Yes
<b>Recommended Texts</b>	Skoal R.R. and F.J.Rohiff Biometry-Freeman, San-Francisco	Yes
<b>Websites</b>	<a href="https://www.khanacademy.org/science/biology">https://www.khanacademy.org/science/biology</a>	

### Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
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## MODULES DESCRIPTION

<b>Success Group</b> <b>(50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
	<b>C - Good</b>	جيد	70 - 79	Sound work with notable errors
	<b>D - Satisfactory</b>	متوسط	60 - 69	Fair but with major shortcomings
	<b>E - Sufficient</b>	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group</b> <b>(0 – 49)</b>	<b>FX – Fail</b>	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	<b>F – Fail</b>	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			
<b>Module Title</b>	Organic chemistry		<b>Module Delivery</b>
<b>Module Type</b>	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
<b>Module Code</b>	BIOT-1209		
<b>ECTS Credits</b>	7		
<b>SWL (hr/Sem)</b>	175		
<b>Module Level</b>	1	<b>Semester of Delivery</b>	2
<b>Administering</b>	Chemistry		College of Science
<b>Module</b>	Mohamed Jabar Mohamed	<b>e-mail</b>	mohammedjabbar0908@gmail.com
<b>Module Leader's Acad. Title</b>	Assistance Professor	<b>Module Leader's Qualification</b>	Ph.D.
<b>Module Tutor</b>		<b>e-mail</b>	E-mail
<b>Peer Reviewer Name</b>	Name	<b>e-mail</b>	E-mail
<b>Scientific Committee Approval Date</b>	01/06/2023	<b>Version</b>	

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

<b>Module Aims, Learning Outcomes and Indicative Contents</b> أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<b>Module Aims</b> أهداف المادة الدراسية	<p>This module aims to provide a good foundation to the students in Organic Chemistry. It teaches fundamental chemical ideas in the framework of Organic Chemistry and begins to build the more specialized understanding of organic processes needed for following modules.</p> <p>This module will be included the main points:</p> <ol style="list-style-type: none"> <li>1. Basic principles of organic chemistry for predicting the atom and electronic structure of molecules, their stability, reactivity, and molecular characteristics including bond types and hybridization.</li> <li>2. Know the organic compounds naming and categorization.</li> <li>3. Through lectures, workshops, tutorials, and seminars, the students will learn more about organic chemistry and understand it better. This course will give them the confidence to talk about the path of simple processes using the language of organic chemistry.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<p>According to the delivery plan , the students who successfully complete the organic chemistry 2 module will be able to:</p> <ol style="list-style-type: none"> <li>1. Predict and explain the expected chemical and physical behavior of an organic compound based on its functional groups and geometry. Identify the electronic configuration of elements atomic and molecular orbitals, especially carbon atoms. Study the types of bonds between elements and the hybridization types of atoms. Recognize the structural isomers, molecular formula, melting points and boiling points.</li> <li>2. Recognize the hydrocarbons generally, and then study All organic compounds are derived from the hydrocarbons because they are made up of only hydrogen and carbon. On the basis of structure, hydrocarbons are divided into two main classes—aliphatic and aromatic. Aliphatic hydrocarbons do not contain the benzene group, or the benzene ring, whereas aromatic hydrocarbons contain one or more benzene rings.</li> <li>3. Preparation of alkanes and Cycloalkanes: Hydrogenation, Reduction of alkyl halides, Coupling of alkyl halides with organometallic compounds.</li> <li>4. Studying structure and shape of alkenes, Geometric Isomers, Nomenclature, preparations, Dehydrohalogenation of alkyl halides, Dehydration of alcohols, Dehalogenation of vicinal dihalides, Reduction of alkynes.</li> <li>5. Reactions of the carbon-carbon double bond: ADDITION REACTIONS, Catalytic hydrogenation, Addition of halogens, Hydroxylation. Glycol formation, Addition</li> </ol>

## MODULES DESCRIPTION

	<p>of hydrogen halides, Addition of sulfuric acid, Polymerization.</p> <p>6. Structure and Bonding in Alkynes, Nomenclature, Preparations, Dehydrohalogenation of alkyl dihalides, Dehalogenation of tetrahalides, Reaction of sodium acetylides with primary alkyl halides, Reactions of Alkynes.</p> <p>7. Nomenclature of Benzene Derivatives, Monosubstituted Benzenes, Disubstituted Benzenes, Polysubstituted Benzenes, reactions of benzene: Electrophilic Aromatic Substitution.</p> <p>8. Effect of substituent groups on benzene (Activating and Deactivating groups), Bromination, Nitration etc.</p>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>Indicative content includes the following.</p> <ol style="list-style-type: none"><li>1. Structural isomers and orbital views of bonding; Structure of alkanes; Physical and chemical properties of alkanes, alkenes, and alkynes.</li><li>2. Terminology, essential ideas, and some basics of organic chemistry.</li><li>3. Basic reactions of alkanes, alkenes, alkynes, Benzene Derivatives; Reactivity and Orientation Naming and classification of organic compounds.</li></ol>

<b>Learning and Teaching Strategies</b> استراتيجيات التعلم والتعليم	
<b>Strategies</b>	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.

<b>Student Workload (SWL)</b>
الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

## MODULES DESCRIPTION

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	94	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	6.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال	81	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب	5.4
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	175		

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

<b>Delivery Plan (Weekly Syllabus)</b> المنهاج الاسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	Introduction of organic chemistry

## MODULES DESCRIPTION

Week 2	Nomenclature of alkanes
Week 3	structure and physical properties of alkanes
Week 4	Reaction of alkanes
Week 5	Synthesis of alkanes
Week 6	Nomenclature of alkene, ,
Week 7	structure and physical properties of alkenes
Week 8	Reaction of alkenes
Week 9	synthesis,and reactions of alkenes
Week 10	Nomenclature of alkynes
Week 11	structure and physical properties of alkynes
Week 12	Reaction of alkynes
Week 13	synthesis,and reactions of alkynes
Week 14	Aromatic compounds and Aromatic substitution reactions
Week 15	Aldehydes and ketones
Week 16	Organic acids

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Determination of Melting point
Week 2	Determination of Boiling point
Week 3	Determination of sublimation
Week 4	Recrystallization : Purification of crystalline organic compound

## MODULES DESCRIPTION

<b>Week 5</b>	Extraction
<b>Week 6</b>	Distillation
<b>Week 7</b>	Simple distillation
<b>Week 8</b>	Fractional distillation
<b>Week 9</b>	Qualitative characterization of functional groups ( Baeyer )
<b>Week 10</b>	Qualitative characterization of functional groups (Tollen)
<b>Week 11</b>	Qualitative characterization of functional groups (Lucas )
<b>Week 12</b>	Qualitative test to defferentiate between type of alcohols (Jones
<b>Week 13</b>	Qualitative characterization of functional groups ( carbonyl )
<b>Week 14</b>	Qualitative characterization of functional groups (haloalkane )
<b>Week 15</b>	Qualitative characterization of functional groups ( carboxylic acid )

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
1	Organic Chemistry, Morrison and Boyd, 6th ed., 1992, Allyn and Bacon	
2	Organic Chemistry, Paula Y. Bruice, 6 th ed., 2011	

## MODULES DESCRIPTION

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	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
<b>Fail Group (0 - 49)</b>	FX - Fail	راسب - قيد المعالجة	(45-49)	More work required but credit awarded
	F - Fail	راسب	(0-44)	Considerable amount of work required
<p><b>Note:</b> 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.</p>				

## MODULE DESCRIPTION FORM

## نموذج وصف المادة

Module Information			
معلومات المادة الدراسية			
Module Title	Computer Skills		Module Delivery
Module Type	Basic		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	SCI-1211		
ECTS Credits	3		
SWL (hr/sem)	75		
Module Level	1	Semester of Delivery	2
Administering Department	Computer	College	College of Science
Module Leader		e-mail	
Module Leader's Acad. Title		Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2024	Version Number	1.0

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

## MODULES DESCRIPTION

<b>Co-requisites module</b>	None	<b>Semester</b>	
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### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ul style="list-style-type: none"> <li>• This module sets out essential concepts and skills relating to the use of devices.</li> <li>• This module covers the key skills and main concepts relating to computers, devices, file creation and management, web browsing, and data security. Help students to demonstrate the ability to use word processing formatting, finishing small-sized word processing documents, such as letters and other everyday documents.</li> <li>• Help students to demonstrate the ability to use a power point application to accomplish tasks associated with creating, and formatting a presentation.</li> <li>• Help students to demonstrate the ability to use Excel application to accomplish a spreadsheet for tasks.</li> </ul>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>Upon successful completion of the course, a student will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand key concepts relating to computers, devices and software.</li> <li>2. Identify the main types of Integrated and External equipment</li> <li>3. Understand concepts of online communities, communications and e-mail</li> <li>4. Adjust the main operating system settings and use built-in help features.</li> <li>5. Know about the main concepts of file management and be able to efficiently organize files and folders.</li> <li>6. Create a report by Ms. Word document and print an output.</li> <li>7. Use University email to Collaborate inside and outside university and How to participate in video conference using meet</li> <li>8. Create a presentation using power point application.</li> <li>9. Create a spreadsheet using Excel application.</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>Indicative content includes the following:</p> <ul style="list-style-type: none"> <li>- The general purpose computer model: All types of computers follow the same structure and perform the basic operations (Input, Processing, Output, Storage and controlling) to converting raw input (data) to information.</li> <li>- Components of a computer Hardware: Each computer consists of Hardware and software. The Hardware includes input devices, output devices, system units, storage devices, and communication devices.</li> <li>- System Units (Internal &amp; External components of system units): The internal component of the system units is consists of (CPU,</li> </ul>

## MODULES DESCRIPTION

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	<p>Motherboard, RAM, Ports, Hard disk ...).</p> <ul style="list-style-type: none"><li>- Central Processing Unit: ALU, CU, and memory unit.</li> <li>- Memory and its Types<ul style="list-style-type: none"><li>▪ Cache Memory</li><li>▪ Primary memory –Comparison between RAM &amp; ROM</li><li>▪ Secondary Storage</li></ul></li> <li>- Ports and their types (Ports: is a connection points used as an interface between the computer and its peripheral devices (Serial ports, Parallel ports, PS/2, USB, VGA ...)).</li><li>- Input Devices (Keyboard, Mouse, ...)</li><li>- Output Devices (Printer, speaker, monitors, ...)</li> <li>- Software</li></ul> <p>Types of Software</p> <ul style="list-style-type: none"><li>▪ Operating System (Windows, Linux, ...)</li><li>▪ Application Software &amp; their types</li><li>▪ Programming Languages (Low, Assembly, High level).</li></ul> <p>Internet, Benefits, Browsing the Web (Web Browser) , Search the web (search</p> <ul style="list-style-type: none"><li>- Communication Technology: It plays an important role in almost every activity that we performed. The best examples of Communication technology includes:blogs, Web sites, live video, social media technology, and E-mail communication.</li><li>- E-mail: free e-mail providers (G-mail, Yahoo-mail, ...), send and receive E-mailoperation, send e-mail with attachment, checking the e-mail boxes (inbox, sendbox, spam ...).</li> <li>- Security and keeping information safe: protect the information from unauthorized access and prevent use, modification, and destruction of thisinformation.</li><li>- Virus transmission ways to the computer: by e-mail, Downloading from the Internet, Pirated software, Exchange of diskettes, in attached e-mail, and indocuments.</li><li>- Protection against viruses: install good anti-viruses.</li><li>- Antivirus, benefits and Types</li></ul> <p>Introduction to windows</p> <ul style="list-style-type: none"><li>- Desktop Components: (Icons, Start, task bar ...)</li><li>- The start menu (its functions and properties)<ul style="list-style-type: none"><li>▪</li></ul></li></ul>
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## MODULES DESCRIPTION

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	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. Different forms of teaching will be used to reach the objective of this module, including power point presentation for the subjects which contains titles, definitions, summary and conclusions, whiteboard will be used and classroom discussion with assignments, the students will be asked to prepare papers on selective topics.
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	49	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	3.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	26	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.73
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	75		

### Module Evaluation

#### تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Quizzes	2	10% (10)	5, 10	LO #1, 2, 4 and 6

## MODULES DESCRIPTION

Formative assessment	Assignments	2	10% (10)	2, 12	LO # 3, 4 and 6
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 6
Summative assessment	Midterm Exam	2 hr	10% (10)	8	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

#### المنهاج الاسبوعي النظري

	Material Covered
Week 1	<p>Introduction to Computers – definition</p> <ul style="list-style-type: none"> <li>-The purposes of using a computer.</li> <li>-The general purpose computer model.</li> <li>-The difference between Data and Information concepts.</li> </ul> <p>Introduction to windows</p> <ul style="list-style-type: none"> <li>- Desktop Components</li> <li>- The start menu (its functions and properties)</li> </ul>
Week 2	<p>The Components of a computer: Hardware</p> <ul style="list-style-type: none"> <li>- System Units (Internal &amp; External components of system units)</li> <li>- Central Processing Unit (Features and components)</li> </ul> <p>Windows:</p> <ul style="list-style-type: none"> <li>- Task bar and its functions and properties</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>- Memory and its Types                             <ul style="list-style-type: none"> <li>▪ Cache Memory</li> <li>▪ Primary memory –Comparison between RAM &amp; ROM</li> <li>▪ Secondary</li> </ul> </li> </ul> <p>Storage Windows:</p> <ul style="list-style-type: none"> <li>- Files and Folders: All operations on files and folders (selection, creation, saving, moving and renaming).</li> </ul>
Week 4	<p>Ports and their types</p> <ul style="list-style-type: none"> <li>- Input Devices,</li> <li>- Output Devices</li> </ul> <p>Windows:</p> <ul style="list-style-type: none"> <li>- Delete Files.</li> <li>- Recycle bin.</li> </ul>

## MODULES DESCRIPTION

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	<ul style="list-style-type: none"> <li>- Creating a Shortcut.</li> <li>- Desktop Icons.</li> <li>- The Windows Explorer Views.</li> <li>- Sort files.</li> </ul>
<b>Week 5</b>	<ul style="list-style-type: none"> <li>- Software</li> <li>Types of Software <ul style="list-style-type: none"> <li>▪ Operating System</li> <li>▪ Application Software &amp; their types</li> </ul> </li> <li>Programming Languages</li> <li>Windows: <ul style="list-style-type: none"> <li>-Customizing the desktop.</li> <li>-Change screen resolution.</li> <li>- Change Desktop Background</li> </ul> </li> </ul>
<b>Week 6</b>	<ul style="list-style-type: none"> <li>- Communication Technology</li> <li>- E-mail</li> <li>Windows: <ul style="list-style-type: none"> <li>- Print Screen</li> <li>- Cleaning Up the Disk</li> <li>- Defragmenting the Disk</li> </ul> </li> <li><b>Quiz (1, 2, 3, 4, 5) -Windows only</b></li> </ul>
<b>Week 7</b>	<ul style="list-style-type: none"> <li>- Internet, Browsing the Web (Web Browser) , Search the web (search engine)</li> <li>- Security and keeping information safe</li> <li>-Virus transmission ways to the computer</li> <li>-Protection against viruses</li> <li>-Antivirus, benefits and Types</li> </ul>
<b>Week 8</b>	<b>Mid Exam</b>
<b>Week 9</b>	<ul style="list-style-type: none"> <li>Microsoft Word <ul style="list-style-type: none"> <li>- - Word Program Interface</li> <li>-Keyboard Shortcuts in Microsoft Word</li> <li>-The operations on Text</li> <li>- File Menu Home Tab &amp; it commands</li> <li>- Insert Tab (Pages &amp; tables Groups)</li> <li>- Table Tools</li> </ul> </li> </ul>
<b>Week 10</b>	<ul style="list-style-type: none"> <li>Microsoft Word <ul style="list-style-type: none"> <li>- Insert Tab (Illustrations, Header &amp; Footer, Text and Symbols Groups)</li> <li>- Page Layout, References, Review Tabs</li> </ul> </li> <li><b>Quiz (Week 8, 9)</b></li> </ul>
<b>Week 11</b>	<ul style="list-style-type: none"> <li>Microsoft PowerPoint <ul style="list-style-type: none"> <li>- PowerPoint program Interface.</li> <li>- File Menu</li> <li>- Home Tab &amp; it commands</li> <li>- Operations on the Slides (duplicate, Delete, and Move)</li> </ul> </li> </ul>
<b>Week 12</b>	<ul style="list-style-type: none"> <li>Microsoft PowerPoint <ul style="list-style-type: none"> <li>- Insert Tab, Design Tab, Slide Show Tab and their commands</li> <li>- Transitions, and Animations Tabs</li> </ul> </li> </ul>
<b>Week 13</b>	<ul style="list-style-type: none"> <li>Microsoft Excel <ul style="list-style-type: none"> <li>- File Menu, Home Tab &amp; it commands</li> </ul> </li> </ul>

## MODULES DESCRIPTION

<b>Week 14</b>	Microsoft Excel - Excel Worksheet Basics - Cell format
<b>Week 15</b>	<b>Preparatory Week</b>

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
<b>Required Texts</b>	<ol style="list-style-type: none"> <li>1. M. E. Vermaat and G. B. Shelly, <i>Discovering Computers Fundamentals: Living in a Digital World</i>, Shelly Cashman, 2011 Edition.</li> <li>2. J. Lambert, J. Cox , and C. Frye, <i>Microsoft Office Professional 2010 Step by Step</i> , 1'st Edition, Microsoft Press, 2010, 152P.</li> </ol>	E-Copy
<b>Recommended Texts</b>	D. Hajek and C. Herrera, <i>Introduction to Computers 2022 Edition</i> , Independently published, May 19, 2022, 255P.	NO
<b>Websites</b>	<ol style="list-style-type: none"> <li>1. <a href="https://theictbook.com/components-of-the-system-unit-and-their-functions/">https://theictbook.com/components-of-the-system-unit-and-their-functions/</a></li> <li>2. <a href="https://www.tutorialspoint.com/computer_fundamentals/index.htm">https://www.tutorialspoint.com/computer_fundamentals/index.htm</a></li> <li>3. <a href="https://www.slideshare.net/Jamjolojessa/types-of-application-software?from_action=sav">https://www.slideshare.net/Jamjolojessa/types-of-application-software?from_action=sav</a></li> <li>4. <a href="https://www.bbc.co.uk/bitesize/guides/zbfny4j/revision/1">https://www.bbc.co.uk/bitesize/guides/zbfny4j/revision/1</a></li> <li>5. <a href="https://generalnote.com/Computer-Fundamental/">https://generalnote.com/Computer-Fundamental/</a></li> <li>6. <a href="https://edu.gcfglobal.org/en/word2010/#">https://edu.gcfglobal.org/en/word2010/#</a></li> <li>7. <a href="https://edu.gcfglobal.org/en/powerpoint2010/#">https://edu.gcfglobal.org/en/powerpoint2010/#</a></li> <li>8. <a href="https://edu.gcfglobal.org/en/excel2010/#">https://edu.gcfglobal.org/en/excel2010/#</a></li> <li>9. <a href="https://antivirus.comodo.com/blog/computer-safety/what-is-antivirus">https://antivirus.comodo.com/blog/computer-safety/what-is-antivirus</a></li> <li>10. <a href="https://thingscouplesdo.com/what-is-the-antivirus-software-that-is-best-for-a-user">https://thingscouplesdo.com/what-is-the-antivirus-software-that-is-best-for-a-user</a></li> </ol>	

## MODULES DESCRIPTION

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

# MODULE DESCRIPTION FORM

## نموذج وصف المادة

Module Information			
معلومات المادة الدراسية			
Module Title	اللغة العربية		Module Delivery
Module Type	Support		Theory Lecture Lab Tutorial Practical Seminar
Module Code	UNI-1212		
ECTS Credits	2		
SWL (hr/sem)	50		
Module Level	2	Semester of Delivery	
Administering Department		College	College of Science
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	01/06/2023	Version Number	1.0

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

**Module Aims, Learning Outcomes and Indicative Contents**

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Objectives</b></p> <p>أهداف المادة الدراسية</p>	<p>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.</p> <p>2- رفع القدرات التعبيرية للطلاب، وزيادة ثروتهم اللغوية ، ومساعدتهم على استخدام العبارة المناسبة بشكل دلالي واضح.</p> <p>3-تدريب الطلبة على التحدث، والتنظيم المنطقي للأفكار، مع الحرص على التمسك باللغة العربية الفصحى .</p> <p>4- رفع الأداء اللغوي العام لدى الطلبة.</p> <p>5- تمكين الطلبة من الكتابة والتعبير والحديث بلغة عربية فصيحة وواضحة.</p> <p>6- مساعدة الطلبة في التعبير عن افكارهم من خلال المناقشة والحوار بلغة سهلة وفصيحة .</p> <p>7- جعل الطلبة قادرين على اكتساب خزين لغوي من الكلمات واللفاظ والتعبير الفصيحة.</p> <p>8- تعلم الطلبة الحفاظ على لغة القرآن التراث العربي الاصيل.</p>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>الاهداف المعرفية والمهارية:</p> <p>1- يعرف اساليب اللغة العربية.</p> <p>2- يوظف ادوات الترقيم عند الكتابة .</p> <p>3- يتدرب على كيفية تحليل النصوص الادبية .</p> <p>4- يعرب بعض الامثلة والتمارين عن الجملة الاسمية والفعلية .</p> <p>5- يناقش بعض النصوص القرآنية والادبية .</p> <p>6- يبين الفرق بين علامات الاعراب الاصلية والفرعية.</p> <p>7- يميز بين الافعال والاسماء في الجمل.</p> <p>8- يتدرب على القراءة الواضحة والإلقاء .</p>

## MODULES DESCRIPTION

	<p>9- يتدرب على الكتابة بخط حسن من خلال التعريف بأنواع الخطوط العربية، وكتابة كل حرف، ثم كتاب الجمل والعبارات بخط الرقعة.</p> <p>10- يميز بين حمزة القطع وهمزة الوصل عند الكتابة .</p> <p>11- يتعلم اساليب التحدث أمام الآخرين مع استعمال التأشير باليد والعين والجسد بما يتناسب مع الكلام .</p> <p>12- يميز بين حرفي الضاد والظاء في الكتابة والنطق.</p> <p>13- يميز بين التاء المربوطة والمفتوحة اثناء الكتابة.</p>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p>توضيح أهمية اللغة العربية وفوائدها بالنسبة للطالب الجامعي (2 ساعة).</p> <p>اللغة، حفظ وتفسير وتحليل أول عشرة آيات من سورة الكهف مع بيان فضل السورة وسبب تسميتها وأهم الأوجه البلاغية والنحوية . (2 ساعة)</p> <p>اللغة، حفظ وتفسير وتحليل ثلاثة آيات من سورة الحجرات مع بيان فضل السورة وسبب تسميتها وأهم الأوجه البلاغية والنحوية. (2 ساعة)</p> <p>الادب، حفظ وتحليل ثلاثة عشر سطرًا من قصيدة سفر ايوب في الشعر الحر للشاعر العراقي بدر شاكر السياب مع حياة الشاعر وأهم الأوجه البلاغية والنحوية في القصيدة. (2 ساعة)</p> <p>الادب، حفظ وتحليل ثمانية ابيات في الحماس للشاعر ابي الطيب المتنبي مع حياة الشاعر مع أهم الأوجه البلاغية والنحوية في القصيدة. (2 ساعة)</p> <p>قواعد اللغة العربية وأهميتها</p> <p>معرفة اقسام الكلام(الاسم والفعل والحرف)وأهم علاماتها.</p> <p>قواعد اللغة العربية :- النكرة والمعرفة، انواع المعارف( العلم ) شرح موضوع (اسم العلم والاسم المركب) مع الأمثلة. (2 ساعة)</p> <p>قواعد اللغة العربية، (الضمائر)شرح موضوع(ضمائر الرفع والنصب والجر) مع الامثلة. (2 ساعة)</p> <p>اللغة، حفظ وتفسير وتحليل سورة الاعلى مع بيان فضل السورة وسبب تسميتها وأهم الأوجه البلاغية والنحوية.</p> <p>الادب، حفظ وتحليل ثمانية ابيات من قصيدة (كن بلسما) للشاعر (ايليا ابي ماضي)مع حياة الشاعر مع أهم الحالات الاعرابية والبلاغية. (2 ساعة)</p> <p>قواعد اللغة العربية، شرح موضوع (اسماء الاشارة) مع الأمثلة وحالات الاعراب، شرح موضوع (المعرف بالإضافة) مع الأمثلة وحالات الاعراب. (2 ساعة)</p> <p>قواعد اللغة العربية، شرح موضوع (الحال)معرفة الحال وصاحبها وما هي انواع الحال مع الأمثلة وحالات الاعراب. (2 ساعة)</p>

## MODULES DESCRIPTION

	الأملاء في اللغة العربية، علامات الترقيم وأهميتها في اللغة العربية. (2 ساعة) قواعد اللغة العربية، شرح موضوع (العدد) معرفة تميز العدد وماهي اقسام العدد مع الأمثلة وحالات الاعراب.
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	<ul style="list-style-type: none"><li>- المحاضرة والمشاركة.</li><li>- المناقشة والحوار.</li><li>- العصف الذهني.</li><li>- كتابة التقارير عن الموضوع.</li><li>- السؤال والجواب .</li></ul>
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### Student Workload (SWL)

#### الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطلاب خلال الفصل	33	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطلاب أسبوعيا	2.2
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطلاب خلال الفصل	17	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطلاب أسبوعيا	1.13
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطلاب خلال الفصل	50		

### Module Evaluation

## MODULES DESCRIPTION

تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	1	10% (10)	5	LO #1, #2 and #10, #11
	Assignments	1	10% (10)	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)	15	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
المنهاج الاسبوعي النظري	
	Material Covered
Week 1	توضيح أهمية اللغة العربية وفوائدها بالنسبة للطلاب الجامعي. <u>اللغة</u> ، حفظ وتفسير وتحليل أول عشرة آيات من سورة الكهف مع بيان فضل السورة وسبب تسميتها وأهم الأوجه البلاغية والنحوية.
Week 2	<u>اللغة</u> ، حفظ وتفسير وتحليل ثلاثة آيات من سورة الحجرات مع بيان فضل السورة وسبب تسميتها وأهم الأوجه البلاغية والنحوية.
Week 3	<u>الأدب</u> ، حفظ وتحليل ثلاثة عشر سطرًا من قصيدة سفر أيوب في الشعر الحر للشاعر العراقي بدر شاكر السياب مع حياة الشاعر وأهم الأوجه البلاغية والنحوية في القصيدة. <u>الأدب</u> ، حفظ وتحليل ثمانية أبيات من قصيدة (أبي الدهر) للشاعر محمود سامي البارودي.
Week 4	<u>الأدب</u> ، حفظ وتحليل ثمانية أبيات من قصيدة (الحماسة) للشاعر أبي الطيب المتنبي مع حياة الشاعر مع أهم الأوجه البلاغية والنحوية في القصيدة.

## MODULES DESCRIPTION

Week 5	<u>قواعد اللغة العربية وأهميتها</u> معرفة اقسام الكلام(الاسم والفعل والحرف)واهم علاماتها_النكرة والمعرفة، انواع المعارف( العلم ) شرح موضوع (اسم العلم والاسم المركب) مع الأمثلة.
Week 6	<u>قواعد اللغة العربية</u> ، شرح موضوع(المبتدأ والخبر) تقديم وتأخير المبتدأ والخبر ، وماهي انواع الخبر.
Week 7	<u>قواعد اللغة العربية</u> ، (الضمانر)شرح موضوع(ضمانر الرفع والنصب والجر) مع الامثلة.
Week 8	<u>اللغة</u> ، حفظ وتفسير وتحليل سورة الاعلى مع بيان فضل السورة وسبب تسميتها واهم الواجه البلاغية والنحوية.
Week 9	<u>الادب</u> ، حفظ وتحليل ثمانية ابيات من قصيدة (كن بلسما) للشاعر (ابيليا ابي ماضي)مع حياة الشاعر مع اهم الحالات الاعرابية والبلاغية. حفظ وتحليل ثمانية ابيات من قصيدة (ارح ركابك)للشاعر محمد مهدي الجواهري.
Week 10	<u>قواعد اللغة العربية</u> ، شرح موضوع (اسماء الاشارة) مع الأمثلة وحالات الاعراب، شرح موضوع (المعرف بالإضافة) مع الأمثلة وحالات الاعراب.
Week 11	<u>قواعد اللغة العربية</u> ، شرح موضوع (الحال)معرفة الحال وصاحبها وما هي انواع الحال مع الأمثلة وحالات الاعراب. <u>الأملاء في اللغة العربية</u> ، علامات الترقيم واهميتها في اللغة العربية.
Week 12	<u>قواعد اللغة العربية</u> ، شرح موضوع (العدد)معرفة تميز العدد وماهي اقسام العدد مع الأمثلة وحالات الاعراب.
Week 13	<u>الأملاء في اللغة العربية</u> ، احكام الهمزة(حمزة الوصل، حمزة القطع، كتابة الهمزة في وسط الكلمة).
Week 14	<u>قواعد اللغة العربية</u> ، شرح موضوع (كان واخواتها) مع الامثلة وحالات الإعراب. <u>الأملاء في اللغة العربية</u> : احكام كتابة الضاد والظاء
Week 15	<u>قواعد اللغة العربية</u> ، شرح موضوع (إن واخواتها) مع الامثلة وحالات الإعراب. <u>الأملاء في اللغة العربية</u> : احكام كتابة التاء المربوطة والمفتوحة والالف الممدودة والمقصورة.

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

### Learning and Teaching Resources

مصادر التعلم والتدريس

Text	Available in the Library?
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## MODULES DESCRIPTION

Required Texts	<ol style="list-style-type: none"> <li>1. القرآن الكريم.</li> <li>2. كتاب البلاغة والتطبيق.</li> <li>3. كتاب الأملاء الواضح .</li> <li>4. منهاج اللغة العربية لغير الاختصاص.</li> </ol>	Yes
Recommended Texts	<ol style="list-style-type: none"> <li>1. كتاب شرح ابن عقيل على الفية ابن مالك/ ابن عقيل عبد الله بن عبد الرحمن.</li> <li>2. كتاب الميسر في اللغة العربية لغير الاختصاص/ الدكتور زياد طارق شولي</li> <li>3. كتاب الأملاء الواضح/ للدكتور عباس حسن.</li> <li>4. منهاج اللغة العربية العامة لغير الاختصاص/ عبد القادر حسن امين</li> </ol>	Yes
Websites	<ol style="list-style-type: none"> <li>1- مكتبة المصطفى <a href="http://www.al-mostafa.com/index.htm">http://www.al-mostafa.com/index.htm</a></li> <li>2- مكتبة مشكاة الإسلام <a href="http://www.almeshkat.net/books/index.php">http://www.almeshkat.net/books/index.php</a></li> <li>3- الجمعية العلمية للغة العربية <a href="http://www.imamu.edu.sa/arabiyah">http://www.imamu.edu.sa/arabiyah</a></li> <li><a href="http://pdfbooks.net/vb/login.php">http://pdfbooks.net/vb/login.php</a> منتديات الكتب المصورة</li> </ol>	

### 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

## MODULES DESCRIPTION

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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.

**University of Diyala**  
**College of Science**  
**Department of Biotechnology**



**MODULES  
DESCRIPTION**

وصف المواد الدراسية

**Second Cycle**

# Semester THREE

## MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية للأحياء المجهرية 1

Module Information			
معلومات المادة الدراسية			
Module Title	Microbiology I		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1311		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	3
Administering Department	Biotechnology	College	College of Science
Module Leader	Hiba Hilal	e-mail	<a href="mailto:Hiba.a@uodiyala.edu.iq">Hiba.a@uodiyala.edu.iq</a>
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	Hadeel Areibi	e-mail	<a href="mailto:Hadeel.a@uodiyala.edu.iq">Hadeel.a@uodiyala.edu.iq</a>
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2024	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Pathogenic bacteria, mycology, immunology and virology.		Semester

## MODULES DESCRIPTION

Co-requisites module	None	Semester	
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### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Enable students to obtain knowledge and understanding of microbiology.</li> <li>2. Providing students with basics and topics related to all branches of microbiology.</li> <li>3. This course deals with the basic concept of microbiology.</li> <li>4. Improving students' skills in scientific research and providing them with basic skills in conducting scientific research and all applications related to microbiology.</li> <li>5. Preparing specialized students familiar with the basics of microbiology, theoretically and practically, who are able to meet the needs of the labor market.</li> <li>6. To develop practical microbiological skills principally diagnosis of causative agents of the infections and diseases of humans and Zoology in additions to learning the ways to controlling and overcome the healthy problems.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. After taken this course the students can recognize all branches of microbiology and Enhancing their knowledge about them.</li> <li>2. List the various terms associated with microbiology.</li> <li>3. Summarize what is meant by microorganisms and their relation to our life.</li> <li>4. Discuss the most details of microorganisms and their involvement in many other fields such as healthy, ecology, epidemiology, industry and etc.</li> <li>5. Be able to describe, recognize and identify the causative structures, shapes and their sizes and arrangement and other details.</li> <li>6. Identify the basic requirements and ingredients for each pathogen invaders.</li> <li>7. Be familiar with the using of the safe application of some of the basic laboratory equipment that's applying in microbiological studies and researches.</li> <li>8. Also be familiar with different strategies for preventing all forms of contamination during the work in the lab. and how can the controlling it.</li> </ol>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية</p>	<p><b>Microbes in our Lives:</b> History of Microbiology, Naming and Classify Microorganism Bacteria, Fungus ,Protozoa ,Algae, Virus</p>

## MODULES DESCRIPTION

<p>يتضمن الكلمات المفتاحية المهمة للمحاضرات</p>	<p><b>Supplies and Growth of microbes:</b> The Supplies for Growth</p> <ul style="list-style-type: none"><li>- Physical elements Chemical and selective ,minimal ,enrich media</li></ul> <p>Types of Chemical principle bonds, PH ,buffer, oxidation</p> <p><b>Physiology and Metabolism of the bacteria</b></p> <p>Microbial metabolism: Is the means by which a microbe obtains the energy and nutrients (e.g. carbon) it needs to live and reproduce</p> <p><b>Microbial Genetics:</b> Structure and replication of DNA Genetic Transfer and Recombination Transformation, Conjugation, Transduction</p> <p>Principles of Diseases: Pathology, Normal Flora Infection and Disease and Opportunists Hosts, Nosocomial Infections, Transmission, Reservoirs</p> <p><b>Antimicrobial agents:</b> Types of antimicrobial agents ,antibiotics ,bacteriocine source of isolates</p>
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<p><b>Learning and Teaching Strategies</b></p> <p>استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<p>Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.</p>

## MODULES DESCRIPTION

### Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.73
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	150		

### Module Evaluation

تقييم المادة الدراسية

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

## MODULES DESCRIPTION

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<b>Delivery Plan (Weekly Syllabus)</b>	
المنهاج الاسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	<b>Introduction and history of microbiology</b>
<b>Week 2</b>	<b>Eukaryotes and prokaryotes cells. Bacterial cell structure and their function</b>
<b>Week 3</b>	<b>Growth and Nutrition of the bacteria.</b>
<b>Week 4</b>	<b>Physiology and Metabolism of the bacteria.</b>
<b>Week 5</b>	<b>Bacterial virulence and pathogenesis.</b>
<b>Week 6</b>	<b>Sterilization and disinfection.</b>
<b>Week 7</b>	<b>Mid-term Exam.</b>
<b>Week 8</b>	<b>Antibiotics and chemotherapeutic agents.</b>
<b>Week 9</b>	<b>Bacterial genetics.</b>
<b>Week 10</b>	<b>Mycology / introduction.</b>
<b>Week 11</b>	<b>Fungi Structure, growth, nutrition and reproduction.</b>
<b>Week 12</b>	<b>Classification and pathogenesis.</b>
<b>Week 13</b>	<b>Fungal infection and their causative agents. ( included three lectures).</b>
<b>Week 14</b>	<b>Fungal infection and their causative agents.</b>
<b>Week 15</b>	<b>Fungal infection and their causative agents.</b>

## MODULES DESCRIPTION

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: <b>Biosafety procedure, precautions and Microscope.</b>
Week 2	Lab 2: <b>Tools, instruments and equipment.</b>
Week 3	Lab 3: <b>Staining methods of bacteria.</b>
Week 4	<b>Lab 4: Acid fast stains ( Ziehl – Nielson technique) and special stains.</b>
Week 5	Lab 5: <b>Capsule stain and their types.</b>
Week 6	Lab 6: <b>Examination.</b>
Week 7	Lab 7: <b>Culture media, preparation and their types.</b>
Week 8	<b>Lab.8: Growing and Cultivation of the bacterial species in the lab.</b>
Week 9	<b>Lab. 9: - Cultivation of the bacteria in the liquid media ( broth) / Motility tests</b>
Week 10	<b>Biochemical test.</b>

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	1. Jawetz, Melnick and Adellberg's. (2011). Textbook of Medical Microbiology.26 <sup>th</sup> Edition.	Yes

## MODULES DESCRIPTION

<b>Recommended Texts</b>	2. Connie,R. Mahon; Donald, C. Leham and George Manguselis. (2011): Text book of Diagnostic Microbiology. Fourth edition.	No
<b>Websites</b>	<ul style="list-style-type: none"> <li>- <a href="https://www.microbiologyresearch.org">https://www.microbiologyresearch.org</a></li> <li>- <a href="https://microbiologysociety.org/why-microbiology-matters/what-is-microbiology.html">https://microbiologysociety.org/why-microbiology-matters/what-is-microbiology.html</a></li> </ul>	

### Grading Scheme

#### مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group</b> (50 - 100)	<b>A</b> - Excellent	امتياز	90 - 100	Outstanding Performance
	<b>B</b> - Very Good	جيد جدا	80 - 89	Above average with some errors
	<b>C</b> - Good	جيد	70 - 79	Sound work with notable errors
	<b>D</b> - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	<b>E</b> - Sufficient	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group</b> (0 – 49)	<b>FX</b> – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	<b>F</b> – 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	Environmental Microbiology		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1312		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	Biotechnology	College	College of Science
Module Leader	Zainaba bed	e-mail	Zainababed@uodiyala.edu.iq
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Mariam Abdeulsalam	e-mail	Mariamabdul_salam@uodiyala.edu.iq
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	1/06/2024	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Microbiology	Semester	5.26
Co-requisites module	Environmental Biotechnology	Semester	4.73

## MODULES DESCRIPTION

<b>Module Aims, Learning Outcomes and Indicative Contents</b> أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1- This course deals with the study of microorganisms in different Environments such as soil, water and air.</li> <li>2- To understand the role of microorganisms in metabolism and recycling of carbon, nitrogen, sulfur and phosphorous compounds.</li> <li>3- Role of microorganism as pathogen transmission and as microbial indicators for water and food pollution</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>1- To understand environmental microbiology, Components of Ecosystem (Environment), Some important terms in Environmental Microbiology</li> <li>2- To know the types of Aquatic microbiology, Importance of aquatic microorganisms and microbial activity in water Column.</li> <li>3- Understand the Role of Microorganisms in Metabolism of C and N compounds.</li> <li>4- Understand Role of microorganisms in Phosphorous and Sulfur compounds metabolism.</li> <li>5- Identifying the types and transmission rout of pathogens in water and waste water, Water borne diseases, Water-washed route, Water-based route, Insect vector route.</li> <li>6- Understanding the role of microbial Indicators in assessment of water quality.</li> <li>7- To understand the concept of Soil Microbiology and microbial interaction, major roles and activities of Bacteria in soil.</li> <li>8- Illustrate the general types and characteristics of Actinomycetes, and study The relation of Actinomycetes to Fungi and bacteria as well clarify Activity and function of Actinomycetes in the Soil,</li> <li>9- Identify the major roles of Fungi in soil environment, Roles and activities of Fungi in soil,</li> <li>10- Diagnosis of Pathogens and Parasites in domestic waste water</li> <li>11- Study the concept of Epidemiology and Chain of Infection, transmission of Pathogens and Parasites Found IN Domestic Wastewater.</li> <li>12- Study the relations between microorganisms such as MICROBE–MICROBE INTERACTIONS.</li> <li>13- Illustrate the concept of Symbiosis between Bacteria and Protozoa, Fungus–Bacterium Symbiosis, Prokaryote–Prokaryote Interactions</li> <li>14- Concept of INTERACTIONS BETWEEN MICROORGANISMS AND ANIMALS, Microbe–Animal Interactions: Parasitism, Mutualism, Grazing and Predation by Animals</li> </ol>
<b>Indicative Contents</b>	Indicative content includes the following:

## MODULES DESCRIPTION

<p>المحتويات الإرشادية يتضمن الكلمات المفتاحية المهمة للمحاضرات</p>	<p>Definitions of Environmental Microbiology, Components of Ecosystem (Environment).</p> <p>Aquatic microbiology, Importance of aquatic microorganisms, microbial flora and microbial activity in water Column.</p> <p>Role of Microorganisms in biogeochemical cycles (Metabolism of C and N compounds).</p> <p>Role of microorganism's in Phosphorus and Sulfur compounds metabolism.</p> <p>Water and Pathogens, Water borne diseases, classification of Water-associated diseases.</p> <p>Indicators of microbial water quality, Indicator Microorganism, Types of indicators.</p> <p>Soil Microbiology and microbial interaction, Soil Microflora, major roles of Bacteria in soil.</p> <p>Actinomycetes in the soil, Major groups of Actinomycetes, Activity and function of Actinomycetes in the Soil, antibiotics produced by Streptomyces spp.</p> <p>Fungi in soil environment, Common genera of Fungi in soil, Roles and activities of Fungi in soil,</p> <p>Pathogens and Parasites in domestic waste water</p> <p>Elements OF Epidemiology, Pathogens and Parasites Found IN Domestic Wastewater,</p> <p>MICROBE–MICROBE INTERACTIONS, Introduction, Classification of Microbial Interactions, Symbiotic Associations,</p> <p>Symbiosis between Bacteria and Protozoa, Fungus–Bacterium Symbiosis, Prokaryote–Prokaryote Interactions</p> <p>INTERACTIONS BETWEEN MICROORGANISMS AND ANIMALS, Microbe–Animal Interactions.</p>
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<h3>Learning and Teaching Strategies</h3> <p>استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<p>Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the collection of different of water soil and clinical samples. Isolation and primitive identification according to the acquired skills from the theoretical and practical information through lectures and Lab.</p>

## MODULES DESCRIPTION

### Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا تملئ من قبل المقررية

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5.25
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.73
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	150		

### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 3, 5, 8 and 12
	Assignments	2	10% (10)	2, 12	LO # 2, 4, 6 and 9
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 3, 5, 6 and 9
Summative assessment	Midterm Exam	2 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	
Week 1	Definitions of Environmental Microbiology, the need to understand environmental microbiology, Components of Ecosystem (Environment), Some important terms in Environmental Microbiology

## MODULES DESCRIPTION

<b>Week 2</b>	Aquatic microbiology, Aquatic microorganisms obtain nutrition in a variety of ways, Importance of aquatic microorganisms, microbial flora and microbial activity in water Column, Metabolic Rate and Temperature, Factor affects the microbes in water such as temperature, gases, salinity
<b>Week 3</b>	Role of Microorganisms in biogeochemical cycles (Metabolism of C and N compounds), The Carbon Cycle, Biodegradation, Nitrogen Cycle, Nitrogen fixation, Ammonification of N compounds, nitrification, denitrification
<b>Week 4</b>	Role of microorganisms P and S metabolism, Microorganisms in Phosphorus cycle, Microorganisms in Sulfur Cycle and Metabolism, Sulfur oxidizing and sulfur reducing bacteria, Characteristics of Sulfur-oxidizing and reducing prokaryotes are, Sulfate assimilation.
<b>Week 5</b>	Water and Pathogens, Water borne diseases, Main Sources of Water Microbial Pollution, Examples of waterborne diseases, classification of Water-associated diseases, A. Water-borne route, B. Water-washed route (Water shortage <i>قلة او ندرة استخدام المياه</i> ), C. Water-based route ( <i>طرق الانتقال عن طريق</i> ) الحشرات, D. Insect vector route ( <i>طرق انتقال الامراض بالاعتماد على المياه</i> )
<b>Week 6</b>	Indicators of microbial water quality, Indicator Microorganism, Types of indicators, fecal coliform and total coliform, Fecal Streptococci, Current methods of detection Microbial indicators
<b>Week 7</b>	Mid-term Exam.
<b>Week 8</b>	Soil Microbiology and microbial interaction, Definition of soil environment, Soil Particles size and layers, Soil Living organic matter (Soil Biota or organisms), Soil Microflora, major roles of Bacteria in soil, Rhizosphere zone in soil, Microbial activity in rhizosphere zone.
<b>Week 9</b>	Actinomycetes in the soil, the general characteristics of Actinomycetes, the relation of Actinomycetes to Fungi, Distribution and abundance of Actinomycetes, comparison of Actinomycetes with the true bacteria, Environmental Influences on Actinomycetes in soil, Major groups of Actinomycetes, Activity and function of Actinomycetes in the Soil, Significance of Actinomycetes, Actinomycetes Antibiotics, antibiotics produced by <i>Streptomyces</i> spp.
<b>Week 10</b>	Fungi in soil environment, Environmental influences on the fungus in soil, Common genera of Fungi in soil, Yeast in soil, Roles and activities of Fungi in soil,
<b>Week 11</b>	Pathogens and Parasites in domestic waste water Elements OF Epidemiology, Some Definitions, Chain of Infection, Pathogens and Parasites Found IN Domestic Wastewater, Bacterial Pathogens, Viral Pathogens, Protozoan Parasites, Helminth Parasites
<b>Week 12</b>	MICROBE–MICROBE INTERACTIONS, Introduction, Classification of Microbial Interactions, Symbiotic Associations,

## MODULES DESCRIPTION

<b>Week 13</b>	Symbiosis between Bacteria and Protozoa, Fungus–Bacterium Symbiosis, Prokaryote–Prokaryote Interactions
<b>Week 15</b>	INTERACTIONS BETWEEN MICROORGANISMS AND ANIMALS, Introduction, Primary and Secondary Symbionts, Microbe–Animal Interactions: Parasitism, Microbe–Animal Interactions: Mutualism, Microbial–Vertebrate Interactions, Grazing and Predation by Animals
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

#### المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Introduction to microbiology
<b>Week 2</b>	Dilution and plating of bacteria and growth curve
<b>Week 3</b>	Preparation of microbiological culture media
<b>Week 4</b>	Isolation of fungi and Actinomycetes from soil
<b>Week 5</b>	Bacteriological test of water: the coliform MPN test
<b>Week 6</b>	Water quality standarda and Isolation of Some Water borne Pathogens
<b>Week 7</b>	Effect of environmental factors on microbial growth
<b>Week 8</b>	Biological Oxygen demand (BOD)
<b>Week 9</b>	Antibacterial activity of bioactive compounds produced by Streptomyces spp. Isolated from agricultural soil
<b>Week 10</b>	

### Learning and Teaching Resources

#### مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Environmental Microbiology, second edition Waste water microbiology third edition Environmental biotechnology, second edition	Yes

## MODULES DESCRIPTION

<b>Recommended Texts</b>	Waste water microbiology third edition Environmental biotechnology, second edition	Yes
<b>Websites</b>		

<b>Grading Scheme</b> مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
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	<b>F – Fail</b>	راسب	(0-44)	Considerable amount of work required
<p><b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.</p>				

## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Nanobiotechnology		Module Delivery
Module Type	CORE		<input type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	BIOT-1313		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	Biotechnology	College	College of Science
Module Leader	Marwa Rashid	e-mail	<a href="mailto:phdjwameer@gmail.com">phdjwameer@gmail.com</a>
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor		e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Biotechnology	Semester	
Co-requisites module	Principle of biotechnology	Semester	

## MODULES DESCRIPTION

<b>Module Aims, Learning Outcomes and Indicative Contents</b> أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. This course deals with the basic concept of nanotechnology</li> <li>2. To understand the important of nanotechnology and its applications in biotechnology.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>1. To know the definition and history of nanotechnology</li> <li>2. To know the new properties of nanomaterials</li> <li>3. To Describe the different methods of synthesis nanomaterials</li> <li>4. To know the types of nanomaterials</li> <li>5. Explain the characterization of nanomaterial by using different techniques</li> <li>6. Explain Direct methods of characterization</li> <li>7. Explain indirect methods of characterization</li> <li>8. Determine the applications of nanotechnology in different aspects</li> <li>9. Applications of nanotechnology in biomedical field</li> <li>10. Learning about the toxicity and how can be reduced it</li> </ol>
<b>Indicative Contents</b> المحتويات الإرشادية يتضمن الكلمات المفتاحية المهمة للمحاضرات	Indicative content includes the following:- -Introduction, history different between micro and nan scale - Understand various chemical and physical methods for the synthesis of nanomaterials -information on the specific details of both bottom up and top-down synthesis - Understand various biological methods for the synthesis of nanomaterials -Classification of nanomaterials ,metal and organic nanomaterials - Understand phase rule/phase diagrams -Coating thin-film metals and semiconductors using different methods -The principle and working of UV -Vis absorption spectroscopy relation of absorption peak of metal nanoparticles with size and shape changes and SEM ,TEM and AFM techniques.

## MODULES DESCRIPTION

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	.Visualization, Teamwork Cooperative Learning, Differentiated Instruction Using new Technology, Student-led Classroom: ,Student Centred Inquiry and Professional Development
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.73
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	150		

### Module Evaluation

#### تقييم المادة الدراسية

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

### Delivery Plan (Weekly Syllabus)

#### المنهاج الاسبوعي النظري

## MODULES DESCRIPTION

	Material Covered
Week 1	Introduction to the course
Week 2	Historical perspective of micro and nano scale
Week 3	Nano manufacturing technology, Advantages and applications of nanotechnology
Week 4	Nano manufacturing technology, Advantages and disadvantages
Week 5	Overview of Nano Fabrication Methods: Top-down and bottom-up approaches
Week 6	Types of nanomaterials organic and inorganic nanomaterials
Week 7	MID TERM EXAM
Week 8	Quantum dots, etc., Organic compounds and bio-applications of nano materials
Week 9	Characterization Tools, Optical microscopy and Spectrophotometer, Scanning Electron Microscope, AFM
Week 10	Application of nano materials, Carbon Nano Tubes
Week 11	Nanopharmaceuticals and Nanomedical Device
Week 12	Bioengineered Nanomaterials
Week 13	Nanosensors
Week 14	Nanotoxicology
Week 15	Nanobiotechnology and Tissue Engineering
Week 16	Preparatory week before the final Exam

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Introduction
Week 2	Lab 2: Synthesis Metal Nanoparticles

## MODULES DESCRIPTION

<b>Week 3</b>	Lab 3: Synthesis of nanomaterials by chemical method
<b>Week 4</b>	Lab 4: Synthesis of nanomaterials by physical method
<b>Week 5</b>	Lab 5: Synthesis of nanomaterials by biological method
<b>Week 6</b>	Lab 6: Nanomaterial characterization techniques
<b>Week 7</b>	Lab 7: Biological bio-medical applications: Antibacterial activity test
<b>Week 8</b>	Lab 8: Antifungal activity test
<b>Week 9</b>	Lab 9: Nanosensors
<b>Week 10</b>	Lab 10: nanocomposites

### Learning and Teaching Resources

#### مصادر التعلم والتدريس

		Available in the Library?
<b>Required Texts</b>	Textbook of Nanoscience Nanotechnology B S Murty, P Shankar, Baldev Raj, B B Rath and James Murday.2013	
<b>Recommended Texts</b>	Nanomaterials in Bionanotechnology: Fundamentals and Applications. Singh and Kshitij RB Singh.ISBN: 9780367689445.2021	
<b>Websites</b>	<a href="file:///C:/Users/Toshiba/Downloads/TextbookofNanoscienceandNanotechnology.pdf">file:///C:/Users/Toshiba/Downloads/TextbookofNanoscienceandNanotechnology.pdf</a> <a href="https://web.pdx.edu/~pmoeck/phy381/intro-nanotech.pdf">https://web.pdx.edu/~pmoeck/phy381/intro-nanotech.pdf</a>	

### Grading Scheme

#### مخطط الدرجات

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

## MODULES DESCRIPTION

**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	Biochemistry1	Module Delivery	
Module Type	Core	<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	BIOT-1314		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	3
Administering Department	Biotechnology	College	College of Science
Module Leader	Ibtihal Sabri	e-mail	<a href="mailto:dr.ebtehal@uodiyala.edu.iq">dr.ebtehal@uodiyala.edu.iq</a>
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D
Module Tutor	Assel Faiq	e-mail	<a href="mailto:aseelaa084@gmail.com">aseelaa084@gmail.com</a>
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2024	Version Number	1.0

### Relation with other Modules

## MODULES DESCRIPTION

العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- Aims of biochemistry to study biomolecules and their components such as enzymes, proteins, hormones, antibiotics, and organic acids, and to identify their importance and role in the bodies of living organisms and to exploit them in diagnosing and treating diseases and abnormalities that afflict living things</li> <li>2- Acquisition of practical, scientific, and laboratory information about the basics of biochemistry, which plays a very large role in the medical and pharmaceutical sectors and in many very important jobs. These fields or specializations include the industrial, health, academic, and many other fields.</li> <li>3- Identify chemical compounds and understand the biochemical reactions that take place in the human body.</li> <li>4- Understanding of the chemical properties of biomolecules and the ability to use and combine biochemical techniques with genetics and physical biology techniques as well as molecular biology.</li> <li>5- The ability to diagnosis of diseases through blood indicators and give the ability to understand normal and pathological phenomena in the human body through theoretical and practical lessons.</li> <li>6- Conducting advanced research in the fields of basic and clinical biochemistry that Serve the community.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- Learn what is carbohydrate and its importance, Carbohydrate is the nutritional component that gives energy.</li> <li>2- Classification of carbohydrates, Hemiacetal formation of monosaccharide structure</li> <li>3- Draw Haworth and Chair projection for Glucose and Fructose from Fischer projection, Formation of alpha and beta glycosidic linkages in disaccharides and polysaccharides.</li> <li>4- General idea about lipid structure and properties. Classify lipids, Understanding the major physiological functions of fatty acids.</li> <li>5- Understanding the structure of saturated or unsaturated fatty acids and study the relation between the structure and function of fatty acids.</li> <li>6- Learning about amino acids, their structure, and types.</li> <li>7- Identify how amino acids form proteins and Define essential and nonessential</li> </ol>

## MODULES DESCRIPTION

	<p>amino acids.</p> <p>8- Distinguish between different types of amino acids and Detection of functional groups in amino acids.</p> <p>9- Understanding the Solubility of amino acids and proteins and solubility as a function of solution PH.</p> <p>10- Understanding the denaturation and Adaptation denaturation of Protein Altering protein's 3 dimensional structure.</p>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية يتضمن الكلمات المفتاحية المهمة للمحاضرات</p>	<p>Indicative content includes the following.</p> <p>Carbohydrate: properties of Carbohydrate. Classification of Carbohydrate (Monosaccharide's - Disaccharides, Polysaccharides), derivatives of monosaccharide's.</p> <p>Lipids : - Classification of lipid , saturated and unsaturated fatty acids , Essential fatty acids , Phospholipids , Cholesterol. Amino acids : Classification of Amino Acids , Properties of Amino Acids , Glutathione. Proteins : classification Based on Functions , Physical and chemical properties. Structure of Proteins , Denaturation of Proteins.</p>

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<p><b>Strategies</b></p>	<p>Biochemistry teaching strategy for biotechnology specialty students, conducted through an improved lecture format with a brief content and multimedia courseware. This is done By using the brainstorming method, , and using the discussion method to stimulate thinking and participation of students and to provide an opportunity for questions and discussion, while respecting their opinions and suggestions, and this method helps in developing the student's personality cognitively, emotionally and skillfully. Also using the methods of thinking maps, it is an effective teaching strategy in representing knowledge through schematic forms that link concepts to each other. Concept maps are used to present new information, discover relationships between concepts, deepen understanding, summarize information, and evaluate the lesson. Encouraging students to prepare reports and present seminars with conducting tests to assess students' understanding and levels.</p>
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### Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem)	79	Structured SWL (h/w)	5.26
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## MODULES DESCRIPTION

الحمل الدراسي المنتظم للطالب خلال الفصل		الحمل الدراسي المنتظم للطالب أسبوعيا	
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.06
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125		

### Module Evaluation

#### تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 8 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 5
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 9 and 10
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

#### المنهاج الأسبوعي النظري

	<b>Material Covered</b>
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## MODULES DESCRIPTION

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<b>Week 1</b>	Carbohydrate- definition and classification
<b>Week 2</b>	Physical and chemical properties of Carbohydrate
<b>Week 3</b>	Monosaccharide's , isomerism , derivatives of monosaccharides
<b>Week 4</b>	Disaccharides , classification of disaccharides
<b>Week 5</b>	Polysaccharides , , classification of polysaccharides
<b>Week 6</b>	Lipids – Definition - Properties – Classification
<b>Week 7</b>	Midterm Exam
<b>Week 8</b>	Simple Lipids , Essential fatty acids , saturated and unsaturated fatty acids
<b>Week 9</b>	Compound Lipids - Phospholipids , sphingolipids, Cholesterol
<b>Week 10</b>	Amino acids - Classification of Amino Acids
<b>Week 11</b>	Properties of Amino Acids , Biologically Important Peptides , Glutathione
<b>Week 12</b>	Proteins - definition and classification Based on Functions
<b>Week 13</b>	classification Based on Physical and chemical properties (Simple proteins - Conjugated proteins and Derived proteins
<b>Week 14</b>	Structure of Proteins , Denaturation of Proteins
<b>Week 15</b>	<b>Preparatory week</b>
<b>Week 16</b>	<b>final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

**Material Covered**

## MODULES DESCRIPTION

<b>Week 1</b>	Lab 1: Chemical laboratory safety.
<b>Week 2</b>	Lab 2: Methods expressing concentration.
<b>Week 3</b>	Lab 3: General test for carbohydrates, reducing tests, pentose's test and ketoses test of sugars.
<b>Week 4</b>	Lab 4: Osazones test, sucrose test, polysaccharides test and hydrolysis of starch.
<b>Week 5</b>	Lab 5: Qualitative tests of lipids.
<b>Week 6</b>	Lab 6: Quantitative tests of lipids.
<b>Week 7</b>	Lab 7: Ninhydrin test, xanthoprotic test, Millon test, glyoxylic test.
<b>Week 8</b>	Lab Lead sulphide test, Nitroprusside test, sakaguchi test.

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Introduction to general organic and biochemistry University of Illinois, Urbana-Champaign	Yes
<b>Recommended Texts</b>	Lippincott's Illustrated Reviews: Biochemistry ESSENTIALS OF BIOCHEMISTRY Pankaja Naik PhD ,Professor and Head Department of Biochemistry, MVPS Dr Vasantao Pawar Medical College Nashik, Maharashtra , India	No
<b>Websites</b>	<a href="http://www.schoolarabia.net/kemya/kymia_hyatia/main.htm">http://www.schoolarabia.net/kemya/kymia_hyatia/main.htm</a>	

## MODULES DESCRIPTION

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

## MODULE DESCRIPTION FORM

### نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Animal physiology		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1315		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Biotechnology	College	College of Science
Module Leader	Massar Hadi	e-mail	<a href="mailto:Masarhadi@uodiyala.edu.iq">Masarhadi@uodiyala.edu.iq</a>
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	
Module Tutor	Veana Ahsan	e-mail	<a href="mailto:veanahsan44@gmail.com">veanahsan44@gmail.com</a>
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2024	Version Number	1.0

### Relation with other Modules

## MODULES DESCRIPTION

### العلاقة مع المواد الدراسية الأخرى

<b>Prerequisite module</b>	Histology, Microtechnique , cytology	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	

### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. To provide a course of study in mammalian, principally human, systems physiology, introducing students to the principles of normal biological function in the Human body</li> <li>2. To explore the fundamental concepts of human physiology from cellular functions through to systems that are responsible for homeostasis.</li> <li>3. To prepare students for subsequent biological courses that require an understanding of the physiology of the Human body</li> <li>4. To understand how human maintains an internal steady state, how they acquire nutrients, and how they detect and respond to changes in their environments</li> <li>5. To develop practical biological skills principally Physiology, Development &amp; Neuroscience, but also Pharmacology, Pathology, and Zoology, among others.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<p>At the end of the course, students should:</p> <ol style="list-style-type: none"> <li>1. Have an enhanced knowledge and appreciation of mammalian physiology</li> <li>2. Understand the functions of important physiological systems including the cardio-respiratory, renal, reproductive, and metabolic systems</li> <li>3. Understand how these separate systems interact to yield integrated physiological responses to challenges such as exercise, fasting, and ascent to high altitude, and how they can sometimes fail</li> <li>4. be able to perform, analyses, and report on experiments and observations in physiology</li> <li>5. be able to recognize and identify principal tissue structures</li> <li>6. Be familiar with the safe use and application of some of the basic laboratory equipment used in physiological studies of animals</li> </ol>

## MODULES DESCRIPTION

<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية يتضمن الكلمات المفتاحية المهمة للمحاضرات</p>	<p>Indicative content includes the following.</p> <ul style="list-style-type: none"><li>• Physiology: Definitions, Methods of Physiology</li><li>• Homeostasis, mechanisms, examples</li><li>• Nervous systems, neuron types, myelin</li><li>• Impulse formation, synapses</li><li>• Muscular system, types, sarcomere, contractile filaments</li><li>• Sliding theory, neuromuscular junction, muscle twitch</li><li>• Circulatory system, heart, vessels, valves, heart sounds</li><li>• Heart circuits, heart rate, conduction system</li><li>• Respiratory system, lung, alveoli, respiratory volumes</li><li>• Urinary system, kidney, nephrons, urine formation</li><li>• Filtration, Reabsorption, secretion</li><li>• Digestive system, stomach, mechanical, chemical digestion,</li><li>• Digestive enzymes, liver, pancreas</li><li>• Endocrine system, hormones, pheromones</li></ul>
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<p><b>Learning and Teaching Strategies</b></p> <p>استراتيجيات التعلم والتعليم</p>	
<p><b>Strategies</b></p>	<p>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 the following:</p> <ul style="list-style-type: none"><li>- Providing students with the basics and additional topics related to the pre-skills education outcomes to solve scientific problems</li><li>-Solve a set of practical examples by the academic staff</li><li>-Students' participation during the lecture to solve some scientific issues</li><li>- Summer training</li></ul>

## MODULES DESCRIPTION

### Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.06
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125		

### Module Evaluation

تقييم المادة الدراسية

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

## MODULES DESCRIPTION

<b>Delivery Plan (Weekly Syllabus)</b>	
المنهاج الاسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	Introduction to physiology, scientific method, measurements, history of physiology, homeostasis, Homeostatic mechanisms
<b>Week 2</b>	Nervous system , the function of NS, Division of NS, Neuron (structure and types) , supporting cells (types and function) , myelin
<b>Week 3</b>	Electrical activity of nerves, impulse formation, active potential, resting potential ,refractory period , synapses electrical – gap junction- , chemical synapses, neurotransmitters (types , functions)
<b>Week 4</b>	Muscular system, types of muscles (skeletal , cardiac,smooth0 (structure and function) , sarcomere (structure and function) ,
<b>Week 5</b>	muscle contraction mechanism, Motor unit isometric and isotonic contractions, muscle fatigue muscle fuels
<b>Week 6</b>	Circulatory system, (cardiovascular system and lymphatic system), Arteries, and veins, (pulmonary circuit and systemic circuit) function of circulatory system , role of capillaries , blood flow.
<b>Week 7</b>	<b>MID TERM EXAM</b>
<b>Week 8</b>	Heart (structure and function ) , Heart chambers and valves , cardiac cycle , heart sounds , heart murmurs , electrical activity of heart , conduction system , pulse , blood pressure , cardiac output , control of heart rate.
<b>Week 9</b>	Respiratory system , component of RS , lung , function of RS, Respiration , Cellular respiration , breathing (external and internal respiration) , factors of normal respiration , breathing cycle , inspiration and expiration mechanism , respiratory values ,
<b>Week 10</b>	Gas exchange between alveoli and blood and between blood and tissue , respiratory quotient , gas transport , respiratory pigments, Alveolar ventilation ,exchange of gases, composition of air and partial pressure of gases ,transport of gases in the blood stream (O <sub>2</sub> ,CO <sub>2</sub> )
<b>Week 11</b>	Urinary system, (structure and function), kidney (structure and function), nephron, glomerular filtration, rate of glomerular filtration, measurements using inulin, absorption of material in each part of the nephron, tubular secretion, nervous and hormonal regulation of kidney function, calcium balance, pH balance, sodium and potassium balance, water balance, the composition of urine,anti-diuretic hormone.

## MODULES DESCRIPTION

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<b>Week 12</b>	Digestive system, structure and function of DS, phases of digestion, Stomach, HCl formation, Small intestine, villi, large intestine,
<b>Week 13</b>	auxiliary glands, gall bladder, bile acids, bile pigments, bilirubin, biliverdin, liver
<b>Week 14</b>	Endocrine glands: pituitary, thyroid, adrenal, pancreas,
<b>Week 15</b>	The preparatory week before the Final Exam

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Lab 1:	Material Covered
<b>Week 1</b>	Lab 1: Hematology. Blood collection &
<b>Week 2</b>	Lab 1:Anticoagulants
<b>Week 3</b>	Determination of Hb,
<b>Week 4</b>	Lab 1:Determination of ESR
<b>Week 5</b>	Lab 1:Determination of bleeding time & clotting time
<b>Week 6</b>	Lab 1:RBC count,
<b>Week 7</b>	Lab 1:WBC count
<b>Week 8</b>	Exam
<b>Week 9</b>	Lab 1:Differential count of WBC
<b>Week 10</b>	Lab 1:Blood group & Rh typing
<b>Week 11</b>	Determination of Blood pressure

## MODULES DESCRIPTION

<b>Week 12</b>	Lab 1:Blood disease
<b>Week 13</b>	Lab 1:Fragility test
<b>Week 14</b>	Lab 1:Liver function tests
<b>Week 15</b>	Exam

### Learning and Teaching Resources

#### مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Human Physiology/ Stuart Iron Fox/2004 أساسيات علم الفسلجة / عبد الرحيم عشير وصباح ناصر العلوجي	Yes
<b>Recommended Texts</b>	A textbook of practical physiology, 2013 (8th edition) ENDOCRINE SECRETS, 6th ed., Michael T. McDermott,2013	No
<b>Websites</b>	<a href="https://en.wikipedia.org/wiki/Physiology">https://en.wikipedia.org/wiki/Physiology</a> <a href="https://www.medicalnewstoday.com/articles/248791">https://www.medicalnewstoday.com/articles/248791</a>	

### Grading Scheme

#### مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	<b>A - Excellent</b>	امتياز	90 - 100	Outstanding Performance
	<b>B - Very Good</b>	جيد جدا	80 - 89	Above average with some errors
	<b>C - Good</b>	جيد	70 - 79	Sound work with notable errors

## MODULES DESCRIPTION

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	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group</b>	<b>FX – Fail</b>	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
<b>(0 – 49)</b>	<b>F – Fail</b>	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	Microbiology 2		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1416		
ECTS Credits	6		
SWL (hr/sem)	150		
Module Level	2	Semester of Delivery	
Administering Department	Biotechnology	College	College of Science
Module Leader	Hiba Ali	e-mail	<a href="mailto:Hiba.a@uodiyala.edu.iq">Hiba.a@uodiyala.edu.iq</a>
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	01/06/2024	Version Number	1.0

### Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

## MODULES DESCRIPTION

<b>Prerequisite module</b>	Pathogenic bacteria, mycology, immunology and virology.	<b>Semester</b>	3
<b>Co-requisites module</b>	None	<b>Semester</b>	

### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Enable students to obtain knowledge and understanding of microbiology.</li> <li>2. Providing students with basics and topics related to all branches of microbiology.</li> <li>3. This course deals with the basic concept of microbiology.</li> <li>4. Improving students' skills in scientific research and providing them with basic skills in conducting scientific research and all applications related to microbiology.</li> <li>5. Preparing specialized students familiar with the basics of microbiology, theoretically and practically, who are able to meet the needs of the labor market.</li> <li>6. To develop practical microbiological skills principally diagnosis of causative agents of the infections and diseases of humans and Zoology in additions to learning the ways to controlling and overcome the healthy problems.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. After taken this course the students can recognize all branches of microbiology and Enhancing their knowledge about them.</li> <li>2. List the various terms associated with microbiology.</li> <li>3. Summarize what is meant by microorganisms and their relation to our life.</li> <li>4. Discuss the most details of microorganisms and their involvement in many other fields such as healthy, ecology, epidemiology, industry and etc.</li> <li>5. Be able to describe, recognize and identify the causative structures, shapes and their sizes and arrangement and other details.</li> <li>6. Identify the basic requirements and ingredients for each pathogen invaders.</li> <li>7. Be familiar with the using of the safe application of some of the basic laboratory equipment that's applying in microbiological studies and researches.</li> <li>8. Also be familiar with different strategies for preventing all forms of</li> </ol>

## MODULES DESCRIPTION

	<b>contamination during the work in the lab. and how can the controlling it.</b>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية يتضمن الكلمات المفتاحية المهمة للمحاضرات</p>	<p><b>Microbes in our Lives:</b> History of Microbiology, Naming and Classify Microorganism Bacteria, Fungus ,Protozoa ,Algae, Virus</p> <p><b>Supplies and Growth of microbes:</b> The Supplies for Growth</p> <p>- Physical elements Chemical and selective ,minimal ,enrich media</p> <p>Types of Chemical principle bonds, PH ,buffer, oxidation</p> <p><b>Physiology and Metabolism of the bacteria</b></p> <p>Microbial metabolism: Is the means by which a microbe obtains the energy and nutrients (e.g. carbon) it needs to live and reproduce</p> <p><b>Microbial Genetics:</b> Structure and replication of DNA Genetic Transfer and Recombination Transformation, Conjugation,Transduction</p> <p>Principles of Diseases: Pathology, Normal Flora Infection and Disease and Opportunists Hosts, Nosocomial Infections, Transmission, Reservoirs</p> <p><b>Antimicrobial agents:</b> Types of antimicrobial agents ,antibiotics ,bacteriocine source of isolates</p>

<b>Learning and Teaching Strategies</b>	
استراتيجيات التعلم والتعليم	
<b>Strategies</b>	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

## MODULES DESCRIPTION

	and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.
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### Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	71	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.73
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	150		

### Module Evaluation

تقييم المادة الدراسية

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

## MODULES DESCRIPTION

<b>Summative assessment</b>	<b>Final Exam</b>	2hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

### Delivery Plan (Weekly Syllabus)

#### المنهاج الاسبوعي النظري

	Material Covered
<b>Week 1</b>	<b>Introduction and history of microbiology</b>
<b>Week 2</b>	<ul style="list-style-type: none"> <li>- Eukaryotes and prokaryotes cells.</li> <li>- Bacterial cell structure and their function</li> </ul>
<b>Week 3</b>	<b>Growth and Nutrition of the bacteria.</b>
<b>Week 4</b>	<b>Physiology and Metabolism of the bacteria.</b>
<b>Week 5</b>	<b>Bacterial virulence and pathogenesis.</b>
<b>Week 6</b>	<b>Sterilization and disinfection.</b>
<b>Week 7</b>	<b>Mid-term Exam.</b>
<b>Week 8</b>	<b>Antibiotics and chemotherapeutic agents.</b>
<b>Week 9</b>	<b>Bacterial genetics.</b>
<b>Week 10</b>	<b>Mycology / introduction.</b>
<b>Week 11</b>	<b>Fungi Structure, growth, nutrition and reproduction.</b>
<b>Week 12</b>	<b>Classification and pathogenesis.</b>
<b>Week 13</b>	<b>Fungal infection and their causative agents. ( included three lectures).</b>

## MODULES DESCRIPTION

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<b>Week 14</b>	<b>Fungal infection and their causative agents.</b>
<b>Week 15</b>	<b>Fungal infection and their causative agents.</b>
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	<b>Material Covered</b>
<b>Week 1</b>	Lab 1: <b>Biosafety procedure, precautions and Microscope.</b>
<b>Week 2</b>	Lab 2: <b>Tools, instruments and equipment.</b>
<b>Week 3</b>	Lab 3: <b>Staining methods of bacteria.</b>
<b>Week 4</b>	<b>Lab 4: Acid fast stains ( Ziehl – Nielson technique) and special stains.</b>
<b>Week 5</b>	Lab 5: <b>Capsule stain and their types.</b>
<b>Week 6</b>	Lab 6: <b>Examination.</b>
<b>Week 7</b>	Lab 7: <b>Culture media, preparation and their types.</b>
<b>Week 8</b>	<b>Lab.8: Growing and Cultivation of the bacterial species in the lab.</b>
<b>Week 9</b>	<b>Lab. 9: - Cultivation of the bacteria in the liquid media ( broth) / Motility tests</b>
<b>Week 10</b>	<b>Biochemical test.</b>

### Learning and Teaching Resources

## MODULES DESCRIPTION

مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	2. Jawetz, Melnick and Adellberg's. (2011). Textbook of Medical Microbiology.26 <sup>th</sup> Edition.	Yes
Recommended Texts	2. Connie,R. Mahon; Donald, C. Leham and George Manguselis. (2011): Text book of Diagnostic Microbiology. Fourth edition.	No
Websites	<ul style="list-style-type: none"> <li>- <a href="https://www.microbiologyresearch.org">https://www.microbiologyresearch.org</a></li> <li>- <a href="https://microbiologysociety.org/why-microbiology-matters/what-is-microbiology.html">https://microbiologysociety.org/why-microbiology-matters/what-is-microbiology.html</a></li> </ul>	

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

## MODULES DESCRIPTION

**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	Biological Control		Module Delivery
Module Type	Core	<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	BIOT-1417		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2		Semester of Delivery
Administering Department	Biotechnology	College	College of Science
Module Leader	Maryam Abdulsalam	e-mail	<a href="mailto:Mariamabdul_salam@uodiyala.edu.iq">Mariamabdul_salam@uodiyala.edu.iq</a>
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	01/06/2024	Version Number	1.0

## MODULES DESCRIPTION

### Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

<b>Prerequisite module</b>	None	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	

### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- To learn the general concepts of biological control and the important organisms involved in it.</li> <li>2- This course deals with the basic concepts of natural control, pests, natural enemies (biological control agents).</li> <li>3- To identify the strategies of biological control.</li> <li>4- Understand the general methods of pest control.</li> <li>5- To identify the Interactions between plants and beneficial microbes.</li> <li>6- To understand the microbial insecticides</li> <li>7- This course deals with the biological control of different plant pathogens (Bacteria, Fungi, Nematodes, filamentous Algae, and weeds).</li> <li>8- To develop skills for detecting microorganisms that cause plant diseases.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- Enable students to obtain knowledge and understanding of biological control.</li> <li>2- List the various terms associated with biological control.</li> <li>3- Learn about traditional control methods and modern methods of pest control.</li> <li>4- Discuss the general advantages and limitations of biological control.</li> <li>5- Summarize the biological control strategies.</li> <li>6- Describe the most important organisms used in the control of insects, nematodes, algae, weeds, and fungi and their mechanisms of action.</li> <li>7- Discuss the use of bacteria, their metabolic products, or their spores, to control other organisms that cause economic damage.</li> <li>8- Explain the use of fungi, their products to control other organisms that cause economic damage.</li> <li>9- Discuss the use of insects to control other organisms that cause economic</li> </ol>

## MODULES DESCRIPTION

	damage. 10- Explain the use of nematodes to control other organisms that cause economic damage.
<b>Indicative Contents</b>  المحتويات الإرشادية  يتضمن الكلمات المفتاحية  المهمة للمحاضرات	Indicative content includes the following.  <u>Part A – General concepts</u>  Introduction to Biological Control – Important Terms, What is biological pest control?, General Advantages and Limitations of Biological Control, Natural Control, Pests, Natural enemies(Biological Control Agents), Strategies of Biological Control, Properties of Classical Biological Control, The general methods of pest control, Interactions between Plants and Beneficial Microbes. [20 hrs]  <u>Part B -The Insecticides</u>  Microbial Insecticides- Microbial Insecticides (Advantages and Disadvantages), Bacterial insecticide, Fungi as Agents of Biocontrol. [18 hrs]  <u>Part C - Biological Control of Pathogens</u>  Biological Control of Plant Pathogens- Biological control of Nematodes, Biological control of filamentous Algae, Biological control of weeds. [22 hrs]

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.
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## MODULES DESCRIPTION

### Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.06
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125		

### Module Evaluation

تقييم المادة الدراسية

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

## MODULES DESCRIPTION

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<b>Delivery Plan (Weekly Syllabus)</b>	
المنهاج الاسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	Important Terms in Biological control
<b>Week 2</b>	Introduction, What is biological pest control?, General Advantages and Limitations of Biological Control, Natural Control, Pests, Natural enemies
<b>Week 3</b>	Strategies of Biological Control, Properties of Classical Biological Control
<b>Week 4</b>	The general methods of pest control
<b>Week 5</b>	Interactions between Plants and Beneficial Microbes
<b>Week 6</b>	Microbial Insecticides (Advantages and Disadvantages), Bacterial insecticide(P1)
<b>Week 7</b>	MID TERM EXAM
<b>Week 8</b>	Microbial Insecticides (Advantages and Disadvantages), Bacterial insecticide(P2)
<b>Week 9</b>	Fungi as Agents of Biocontrol
<b>Week 10</b>	Biological Control of Plant Pathogens
<b>Week 11</b>	Biological control of Nematodes(P1)
<b>Week 12</b>	Biological control of Nematodes(P2)
<b>Week 13</b>	Biological control of filamentous Algae
<b>Week 14</b>	Biological control of weeds
<b>Week 15</b>	<b>Preparatory week before the final Exam</b>
<b>Week 16</b>	

## MODULES DESCRIPTION

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab 1: Definition, History and development, Classical examples, Factors governing biological control
<b>Week 2</b>	Lab 2: Five Major Types of Species (Natural enemies)
<b>Week 3</b>	Lab 3: Interactions; Examples of Symbiotic Species, Parasitism, Mutualism, Commensalism, Competition,
<b>Week 4</b>	Lab 4: Sampling Methods and Tools
<b>Week 5</b>	Lab 5: Mid Exam 1
<b>Week 6</b>	Lab 6: Biological Control of Weeds
<b>Week 7</b>	Lab 7: Biological Control of Nematodes
<b>Week 8</b>	Lab 8: Biological control of Fungi
<b>Week 9</b>	Lab 9: Biological control of filamentous Algae
<b>Week 10</b>	Lab 10: Biological Control of Plant Pathogens
<b>Week 11</b>	Lab 11: Mid Exam 2

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
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## MODULES DESCRIPTION

<b>Required Texts</b>	<p>- Biological Control: Benefits and Risks. 1995. Heikki M. T. Hokkanen and James M. Lynch. Cambridge, University Press.</p> <p>- Biological Control A Global Perspective. 2007. Charles Vincent, Mark S.Goettel, and George Lazarovits. CABI, UK, USA.</p>	No
<b>Recommended Texts</b>	<p>- Plant Defence: Biological Control. 2012. Jean Michel Merillon &amp; Kishan Gopal Ramawat. Springer, Dordrecht Heidelberg London New York</p> <p>-Trophic and Guild in Biological Control. 2006. Jacques Brodeur and Guy Boivin. Springer. Dordrecht, The Netherlands.</p>	No
<b>Websites</b>	<p><a href="https://biocontrol.entomology.cornell.edu/links.php">https://biocontrol.entomology.cornell.edu/links.php</a></p> <p><a href="https://cals.cornell.edu/new-york-state-integrated-pest-management/eco-resilience/biocontrol">https://cals.cornell.edu/new-york-state-integrated-pest-management/eco-resilience/biocontrol</a></p> <p><a href="https://www.youtube.com/channel/UCJlzzBwuorwLbviAhEgbnqQ">https://www.youtube.com/channel/UCJlzzBwuorwLbviAhEgbnqQ</a></p>	

### Grading Scheme

#### مخطط الدرجات

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

## MODULES DESCRIPTION

**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	Phycology		Module Delivery	
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar	
Module Code	BIOT-1418			
ECTS Credits	5			
SWL (hr/sem)	125			
Module Level	2	Semester of Delivery	4	
Administering Department	Biotechnology	College	College of Science	
Module Leader	Alhan Muhamed		e-mail	<a href="mailto:alhanalwan@uodiyala.edu.iq">alhanalwan@uodiyala.edu.iq</a>
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			e-mail	E-mail
Scientific Committee Approval Date	30/06/2024		Version Number	1.0

## MODULES DESCRIPTION

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	
<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. This course deals with the basic concept of Phycology.</li> <li>2. To understand the role of Phycology in biotechnology field.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	To recognize the : <ol style="list-style-type: none"> <li>1- Older classification systems of algae, fossils records, distribution of algae, forms of algal bodies.</li> <li>2- Cell structures of algae, Plastids, Pigments, Storage products, Types of flagella, types of growth, Reproduction and life cycles</li> <li>3- Newer classification system of algae into ten divisions, Division 1: Cyanophycophyta, Cell structure, morphology, Reproduction, Classification.</li> <li>4- Division 2: Chlorophycophyta, main characteristics, Classification into 15 orders with examples.</li> <li>5- Division 3: Charophycophyta and Division 4: Euglenophycophyta, Division 5 : main characteristics, Classification, with examples.</li> <li>6- Division: 5 Xanthophycophyta: Classification of this division into three classes, Class 1: Chrysophyceae, Class 2: Xanthophyceae Class 3: Bacillariophyceae While consider as division in other classification system.</li> <li>7- Division 8: Phaeophycophyta, general characteristics, Reproduction organs, Growth, and classification.</li> <li>8- Division 9: Pyrrhophycophyta: general characteristics, and classification with examples.</li> <li>9- Division 10: Rhodophycophyta: general characteristics, Commercial utilization of red algal mucilages, Application in Biotechnology, Classification with examples.</li> </ol>
<b>Indicative Contents</b> المحتويات الإرشادية	Indicative content includes the following: <ul style="list-style-type: none"> <li>- Older classification systems for algae, Fossil recode, Distribution, Algal forms</li> </ul>

## MODULES DESCRIPTION

<p>يتضمن الكلمات المفتاحية المهمة للمحاضرات</p>	<ul style="list-style-type: none"> <li>- Growth and reproduction, Cell structure, Pigments and chloroplast, storage product and life cycles.</li> <li>- Others classification systems, Cyanophyta, Cholorophyta</li> <li>- Charophyta and Euglenophyta.</li> <li>- Xanthophytan, Chrysophyta, and Bacillariophyta.</li> <li>- Phaeophyta and Pyrrhophyta</li> <li>- Rhodophyta and its application in Biotechnology.</li> </ul>
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<p><b>Strategies</b></p>	<p>Type something like: Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the collection of different samples, media preparation. Isolation and primitive identification according to the acquired skills from the theoretical and practical information through lectures and Lab.</p>
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<p><b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل</p>	<p>79</p>	<p><b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا</p>	<p>5.26</p>
<p><b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل</p>	<p>46</p>	<p><b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا</p>	<p>3.06</p>
<p><b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل</p>	<p>125</p>		

### Module Evaluation

#### تقييم المادة الدراسية

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<p>Quizzes</p>	<p>2</p>	<p>10% (10)</p>	<p>5, 10</p>	<p>LO #1, 2, 10 and 11</p>

## MODULES DESCRIPTION

Formative assessment	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 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
Week 1	Introduction , Old classification systems, Fossils record, Occurrence and distribution, Alga forms
Week 2	Cell structure, Cell wall, Protoplast, Plastid and pigments, Storage products
Week 3	Nucleus, Flagella, Growth in algae, Reproduction and life cycles
Week 4	Others classification systems, Division: Cyanophycophyta, General characteristics, Morphology, Cell wall structure and gliding, Protoplasmic structures, Pigments, Akinetes , Heterocysts , Reproduction,
Week 5	,Occurrence and Habitat, Classification
Week 6	Division: Chlorophycophyta, Introduction, Occurrence and Habitat , General characteristics, Cell fine structure, Phototaxis and eyespots, Classification, Order: Chlorellales, Order: Vovocales
Week 7	Mid examine
Week 8	Genus: Volvox, Order: Tetrasporales, Order: Ulothrichales, Order: Oedogoniales, Order:
Week 9	Cladophorales, Order: Zygnematales, Order: Siphonocladales
Week 10	Division: Charophycophyta, Order: Charales, General characteristics, Growth, Reproduction
Week 11	Division: Euglenophycophyta, General characteristics, Cell structure and Nutrition,Classification, Order: Euglenales, Genus: Euglena, Description under light and electronic Microscope.
Week 12	Division: Xanthophycophyta, Introduction, General characteristics , Classification, Order: Mischococcales, Order: Tribonematales, Order: Botrydiales, Order: Vaucheriales
Week 13	Division: Phaeophycophyta ,General characteristics, Reproduction, Life cycle and Growth, Classification, Order:Ectocarpales , Family: Ectocarpaceae

## MODULES DESCRIPTION

<b>Week 14</b>	Division: Pyrrhophycophyta, General characteristics, Classification, Toxins, Red tides and its csuses.
<b>Week 15</b>	Division: Rhodophycophyta, General characteristics, Commercial utilization of red algal mucilages, Reproductive structures, Classification, Order: Ceramiales
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab 1: Algal forms
<b>Week 2</b>	Lab 2: Taxonomic and collection methods for algae
<b>Week 3</b>	Lab 3: Division: Cyanophyta
<b>Week 4</b>	Lab 4: Chlorophyta part1
<b>Week 5</b>	Lab 5: Cholorophyta part 2
<b>Week 6</b>	Lab 6: Euglanophyta and Pyrrhophyta
<b>Week 7</b>	Lab 7: Xanthophyta and Chrysophyta
<b>Week 8</b>	Lab 8: Phaeophyta and Bacillariophyta
<b>Week 9</b>	Lab 9: Rhodophyta

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Phycology, by Robert Edward Lee, Fourth Edition, Cambridge 2008.	No
<b>Recommended Texts</b>		No
<b>Websites</b>	<a href="https://www.twinkl.com">https://www.twinkl.com</a>	

### Grading Scheme

## MODULES DESCRIPTION

مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	<b>A</b> - Excellent	امتياز	90 - 100	Outstanding Performance
	<b>B</b> - Very Good	جيد جدا	80 - 89	Above average with some errors
	<b>C</b> - Good	جيد	70 - 79	Sound work with notable errors
	<b>D</b> - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	<b>E</b> - Sufficient	مقبول	50 - 59	Work meets minimum criteria
<b>Fail Group (0 - 49)</b>	<b>FX</b> - Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	<b>F</b> - 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	Biochemistry2		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1419		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Biotechnology	College	College of Science
Module Leader	Ibtihal Sabri	e-mail	<a href="mailto:dr.ebtehal@uodiyala.edu.iq">dr.ebtehal@uodiyala.edu.iq</a>
Module Leader's Acad. Title	Lecturer	Module Leader's Qualification	Ph.D.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date	01/06/2024	Version Number	1.0

## MODULES DESCRIPTION

### Relation with other Modules

العلاقة مع المواد الدراسية الأخرى

<b>Prerequisite module</b>	Biochemistry1	<b>Semester</b>	3
<b>Co-requisites module</b>	None	<b>Semester</b>	

### Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- Aims of biochemistry to study biomolecules and their components such as enzymes, proteins, hormones, antibiotics, and organic acids, and to identify their importance and role in the bodies of living organisms and to exploit them in diagnosing and treating diseases and abnormalities that afflict living things</li> <li>2- Acquisition of practical, scientific, and laboratory information about the basics of biochemistry, which plays a very large role in the medical and pharmaceutical sectors and in many very important jobs. These fields or specializations include the industrial, health, academic, and many other fields.</li> <li>3- Identify chemical compounds and understand the biochemical reactions that take place in the human body.</li> <li>4- Understanding of the chemical properties of biomolecules and the ability to use and combine biochemical techniques with genetics and physical biology techniques as well as molecular biology.</li> <li>5- The ability to diagnosis of diseases through blood indicators and give the ability to understand normal and pathological phenomena in the human body through theoretical and practical lessons.</li> <li>6- Conducting advanced research in the fields of basic and clinical biochemistry that Serve the community.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1- Identify the principles of bioenergetics and enzyme catalysis and understand the behavior of enzymes, by describing the catalytic properties and ways to regulate these properties.</li> <li>2- Understanding the chemical reactions catalyzed by enzymes that contribute to all biochemical processes within an organism.</li> <li>3- Carbohydrates - glucose provides energy for the brain and <math>\frac{1}{2}</math> of energy for muscles and tissues, glycogen is stored glucose, glucose is immediate energy, glycogen is reserve energy</li> <li>4- Carbohydrates also help to digest protein and fat.</li> </ol>

## MODULES DESCRIPTION

	<p>5- Carbohydrates also play a vital part of the metabolism and oxidation of protein, Carbs help feed the brain and nervous system and helps keep the body lean.</p> <p>6- Define the major pathways of intermediary metabolism of biomolecules, and discuss their bioenergetics, physiological adaptation, metabolic and main hormonal regulation.</p> <p>7- Understanding major catabolic and anabolic pathways in metabolism of carbohydrates and lipids</p> <p>8- Explain the key regulatory points in metabolic pathways and understanding hormonal signaling in metabolic pathways.</p> <p>9- Explain molecular mechanisms underlying major inherited diseases of metabolism.</p>
<p><b>Indicative Contents</b></p> <p>المحتويات الإرشادية يتضمن الكلمات المفتاحية المهمة للمحاضرات</p>	<p>Indicative content includes the following.</p> <p>Enzymes, Mechanism of enzymes action, Factors Affecting the Velocity of Enzyme Reaction, Enzyme kinetics, Enzyme inhibition.</p> <p>Metabolism, Carbohydrates metabolism, glycolysis, Citric acid cycle.</p> <p>Gluconeogenesis, Glycogen metabolism – Glycogenesis and Glycogenolysis.</p> <p>Lipid metabolism, Fatty acid oxidation, regulation of beta oxidation.</p>

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<p><b>Strategies</b></p>	<p>Biochemistry teaching strategy for biotechnology specialty students, conducted through an improved lecture format with a brief content and multimedia courseware. This is done By using the brainstorming method, , and using the discussion method to stimulate thinking and participation of students and to provide an opportunity for questions and discussion, while respecting their opinions and suggestions, and this method helps in developing the student's personality cognitively, emotionally and skillfully. Also using the methods of thinking maps, it is an effective teaching strategy in representing knowledge through schematic forms that link concepts to each other. Concept maps are used to present new information, discover relationships between concepts, deepen understanding, summarize information, and evaluate the lesson. Encouraging students to prepare reports and present seminars with conducting tests to assess students' understanding and levels.</p>
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## MODULES DESCRIPTION

### Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.06
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125		

### Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	10% (10)	5, 10	LO #1, 2, 8 and 11
	<b>Assignments</b>	2	10% (10)	2, 12	LO # 3, 4, 6 and 5
	<b>Projects / Lab.</b>	1	10% (10)	Continuous	All
	<b>Report</b>	1	10% (10)	13	LO # 5, 9 and 10
<b>Summative assessment</b>	<b>Midterm Exam</b>	2hr	10% (10)	7	LO # 1-7
	<b>Final Exam</b>	2hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

## MODULES DESCRIPTION

<b>Delivery Plan (Weekly Syllabus)</b>	
المنهاج الاسبوعي النظري	
	<b>Material Covered</b>
<b>Week 1</b>	Enzymes –Definition –Cofactors -Location of enzyme - How Enzymes work
<b>Week 2</b>	Mechanism of enzymes action -Enzymes classification
<b>Week 3</b>	Specificity of enzyme action - Factors Affecting the Velocity of Enzyme Reaction
<b>Week 4</b>	Enzyme kinetics - Enzyme inhibition - Allosteric enzyme-Isozymes
<b>Week 5</b>	Metabolism - Definition-Carbohydrates metabolism - Digestion of carbohydrate
<b>Week 6</b>	Glycolysis - Reaction of glycolysis - Regulation of glycolysis
<b>Week 7</b>	Midterm Exam
<b>Week 8</b>	Citric acid cycle - Reaction and significance of TCA- Regulation of TCA
<b>Week 9</b>	Gluconeogenesis- Definition-Location-Characteristic- Reaction of gluconeogenesis- Regulation and significance
<b>Week 10</b>	Glycogen metabolism – Glycogenesis – Definition-Location-Characteristic - Reaction of glycogenesis
<b>Week 11</b>	Glycogenolysis - Definition-Location-Characteristic - Reaction of glycogenolysis
<b>Week 12</b>	Regulation of glycogenesis and glycogenolysis
<b>Week 13</b>	Lipid metabolism - Digestion of lipid -Fatty acid oxidation .
<b>Week 14</b>	Reaction and regulation of beta oxidation .
<b>Week 15</b>	<b>Preparatory week</b>
<b>Week 16</b>	<b>final Exam</b>

## MODULES DESCRIPTION

### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab 1: Blood-Types and serum, plasma
<b>Week 2</b>	Lab 2: General urine examination
<b>Week 3</b>	Lab 3: Blood glucose
<b>Week 4</b>	Lab 4: lipid profile , Cholesterol , Triglycerides
<b>Week 5</b>	Lab 5: Uric acid
<b>Week 6</b>	Lab 6: Urea , Creatinine
<b>Week 7</b>	Lab 7: Total protein
<b>Week 8</b>	Lab 8 Liver enzymes

### Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
<b>Required Texts</b>	Introduction to general organic and biochemistry University of Illinois, Urbana-Champaign	Yes
<b>Recommended Texts</b>	Lippincott's Illustrated Reviews: Biochemistry ESSENTIALS OF BIOCHEMISTRY	No

## MODULES DESCRIPTION

	Pankaja Naik PhD ,Professor and Head Department of Biochemistry, MVPS Dr Vasantao Pawar Medical College Nashik, Maharashtra , India	
<b>Websites</b>	<a href="http://www.schoolarabia.net/kemya/kymia_hyatia/main.htm">http://www.schoolarabia.net/kemya/kymia_hyatia/main.htm</a>	

### Grading Scheme

#### مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group</b> (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
<b>Fail Group</b> (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	Histology and Microtechnique		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1420		
ECTS Credits	5		
SWL (hr/sem)	125		
Module Level	2	Semester of Delivery	
Administering Department	Biotechnology	College	College of Science
Module Leader	Riyadh Hameed Nsaif	e-mail	<a href="mailto:riyadhameed@uodiyala.edu.iq">riyadhameed@uodiyala.edu.iq</a>
Module Leader's Acad. Title	Assistant Professor	Module Leader's Qualification	Ph.D.
Module Tutor	Massar Hadi	e-mail	<a href="mailto:Masarhadi@uodiyala.edu.iq">Masarhadi@uodiyala.edu.iq</a>
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2024	Version Number	1.0

### Relation with other Modules

## MODULES DESCRIPTION

### العلاقة مع المواد الدراسية الأخرى

<b>Prerequisite module</b>	Microtechnique, cytology	<b>Semester</b>	
<b>Co-requisites module</b>	None	<b>Semester</b>	

### Module Aims, Learning Outcomes and Indicative Contents

#### أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

<p><b>Module Aims</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. The course trains students in the skills of taking samples, making animal histological specimens, and proficiently using microscopes and other laboratory machines.</li> <li>2. To provide knowledge of the preparation of tissues for light and fluorescence microscopy</li> <li>3. To provide knowledge of the histological structure of tissues and organs at both the light and electron microscopic level.</li> <li>4. To provide a good grounding in histological/histopathological techniques.</li> <li>5. To the knowledge of laboratory management principles, quality management, and safety procedures in the histology laboratory.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Receive, prepare, and process specimens for histopathological investigation. To include dissection, tissue selection cutting, fixation, and staining, as appropriate.</li> <li>2. Select the appropriate demonstration technique in the investigation of representative histopathology specimens.</li> <li>3. Use microscopic examination techniques to investigate histopathological specimens.</li> <li>4. Recognize normal cellular morphology of representative tissues and organs and common pathobiological processes associated with them.</li> <li>5. Comply with quality assurance processes associated with histopathological investigations.</li> <li>6. Describe the receipt, preparation, and processing of specimens for histopathological diagnosis.</li> <li>7. Describe the appropriate demonstration technique as part of the diagnostic</li> </ol>

## MODULES DESCRIPTION

	process. 8. Explain and evaluate microscopical examination techniques.
<b>Indicative Contents</b> المحتويات الإرشادية يتضمن الكلمات المفتاحية المهمة للمحاضرات	Indicative content includes the following. <ul style="list-style-type: none"><li>● Compound Microscope</li><li>● Non –sectioning methods</li><li>● Paraffin methods</li><li>● Dissection</li><li>● Epithelial tissues</li><li>● Connective tissues</li><li>● Cartilage</li><li>● Bone</li><li>● Nervous tissue</li><li>● Muscular tissue</li></ul>

### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	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 the following: <ul style="list-style-type: none"><li>- Providing students with the basics and additional topics related to the pre-skills education outcomes to solve scientific problems</li><li>- Students' participation during the lecture to solve some scientific issues</li><li>- Summer training</li></ul>
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### Student Workload (SWL)

## MODULES DESCRIPTION

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	79	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	5.26
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	46	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.06
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	125		

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

Delivery Plan (Weekly Syllabus)
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## MODULES DESCRIPTION

المناهج الاسبوعي النظري	
	Material Covered
Week 1	Definition & laboratory rules history, microscopy, types of microscopes, microscope technique, None sectioning methods for samples preparation
Week 2	Sectioning methods (Paraffin) Fixation, washing, dehydration, clearing, Embedding, , advantages and disadvantages
Week 3	Sectioning, microtomes, types of microtomes, frozen sections, mounting, Staining, classification of stains, labeling, Immunological staining
Week 4	Introduction in histology, Components of tissues, basic types of tissues, Epithelial tissue, classification, types
Week 5	Epithelial cell polarity, Specialization of the apical cell surface, Glandular epithelium, classification. Glands classification
Week 6	Connective tissues, components, proper conn. Tissue, Specialize connective tissues, adipose tissue, Cartilage
Week 7	<b>MID EXAM</b>
Week 8	Specialize in connective tissues, Cartilage,
Week 9	Bone, Process of Bone Formation
Week 10	Histology of the skin, cells, layers,
Week 11	Muscular system (structure. Arteries and veins sections
Week 12	Nervous system , component, neuron, supporting cells
Week 13	Digestive tract, Sections
Week 14	Liver, spleen, Pancreas,
Week 15	Urinary system, kidney

## MODULES DESCRIPTION

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### Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

Lab 1:	Material Covered
<b>Week 1</b>	Lab1: Compound Microscope- Inverted microscope, Fluorescence microscopy, Wet mounts slide
<b>Week 2</b>	Lab 2: The different methods in microscopic slide preparation- Dry Mount, Wet Mount, Squash Slides, Staining, Blood smear: Types of stains: Some blood abnormalities distinguished by a blood smear: Preparation of Peripheral Blood Smear: Leishman's Stain:
<b>Week 3</b>	Lab 3: Paraffin methods, killing process, Gross Examination, Fixation, Type of fixative solutions, Dehydration, Paraffin Embedding, Blocking, Sectioning, Staining, Mounting
<b>Week 4</b>	Lab 4-: Mouse Dissection
<b>Week 5</b>	Exam
<b>Week 6</b>	Lab 5: Epithelial tissues
<b>Week 7</b>	Lab 6: Glands
<b>Week 8</b>	Lab 7: Connective tissues: Part 1
<b>Week 9</b>	Lab 8: Connective tissues: Part 2
<b>Week 10</b>	Lab 9: Cartilage
<b>Week 11</b>	Lab 10: Bone
<b>Week 12</b>	Lab 11: Liver, spleen
<b>Week 13</b>	Lab 12: Pancreas, Kidney
<b>Week 14</b>	Exam

## MODULES DESCRIPTION

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	التحضيرات المجهرية / كواكب المختار Microtechnique /Gray /1977, A text and atlas / Ross and Pawlina /2006 المجلات العلمية الرصينة محاضرات الهيئة التدريسية	Yes
Recommended Texts	Junqueira's Basic Histology Text & Atlas (14th ed.) Anthony L Mescher ..2016	No
Websites	Histology guide <a href="http://www.histologyguide.com/about-us/atlas-of-human-histology.html">http://www.histologyguide.com/about-us/atlas-of-human-histology.html</a> An Atlas of Histology <a href="https://www.springer.com/gp/book/9780387949543">https://www.springer.com/gp/book/9780387949543</a>	

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

## MODULES DESCRIPTION

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<b>Fail Group</b>	<b>FX – Fail</b>	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
<b>(0 – 49)</b>	<b>F – Fail</b>	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	Biosafety		Module Delivery
Module Type	Support		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input checked="" type="checkbox"/> Seminar
Module Code	BIOT-1421		
ECTS Credits	2		
SWL (hr/Sem)	100		
Module Level	2	Semester of Delivery	
Administering Department	Biotechnology	College	College of Science
Module	Shaymaa Hatem Al-Majmaie	e-mail	<a href="mailto:shaymaa@uodiyala.edu.iq">shaymaa@uodiyala.edu.iq</a>
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	01/06/2024	Version	

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

Module Aims, Learning Outcomes and Indicative Contents	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<p><b>Module Objectives</b></p> <p>أهداف المادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Prepare students to acquire knowledge and understanding of the conceptual framework and applications of biotechnology and nanotechnology.</li> <li>2. Prepare students to acquire knowledge and understanding of industrial, environmental, and food microbiology.</li> <li>3. Prepare students to acquire knowledge and understanding of genetics, genetic engineering, and cellular genetics.</li> <li>4. Prepare students to acquire knowledge and understanding of plant, plant tissue, and animal biology.</li> <li>5. Prepare students to acquire knowledge and understanding of diseases, immunity, and pathogenic bacteria.</li> <li>6. Prepare students to acquire knowledge and understanding of cell biology and microbiology standards.</li> <li>7. Prepare students to acquire knowledge and understanding of biological statistics and the English language.</li> </ol>
<p><b>Module Learning Outcomes</b></p> <p>مخرجات التعلم للمادة الدراسية</p>	<ol style="list-style-type: none"> <li>1. Understand the principles and importance of biosafety and biosecurity in handling microorganisms and biological materials.</li> <li>2. Demonstrate knowledge of the different containment levels and appropriate safety measures for working with various biological agents.</li> <li>3. Apply proper techniques and protocols for handling, storing, and disposing of biological materials to minimize risks and prevent accidental release.</li> <li>4. Identify potential hazards and assess risks associated with specific biological experiments or procedures.</li> <li>5. Implement effective measures to mitigate risks and ensure the safety of researchers, the environment, and the community.</li> </ol>

## MODULES DESCRIPTION

	<p>6. Comply with relevant regulations, guidelines, and ethical considerations in the field of biosafety and biosecurity.</p> <p>7. Recognize the significance of early detection and diagnosis of genetic diseases through genetic engineering and immunological techniques.</p> <p>8. Understand the principles and applications of tissue culture in the field of animal cell biology.</p> <p>9. Evaluate and implement appropriate measures to maintain the security and integrity of biological materials and prevent unauthorized access or misuse.</p> <p>10. Communicate and collaborate effectively within a biosafety framework, demonstrating an understanding of the importance of clear communication and teamwork in maintaining a safe and secure laboratory environment</p>
<p><b>Indicative Contents</b> المحتويات الإرشادية</p>	<p>1. Introduction to biosafety and biosecurity: Concepts, importance, and historical background.</p> <p>2. Biosafety levels and containment systems: Overview of different biosafety levels and their associated safety measures and equipment.</p> <p>3. Risk assessment and management: Techniques for identifying, assessing, and mitigating risks in biological research and laboratory settings.</p> <p>4. Safe handling and manipulation of biological materials: Proper techniques for handling, storing, and transporting microorganisms, genetically modified organisms (GMOs), and other biological agents.</p> <p>5. Personal protective equipment (PPE) and laboratory safety protocols: Understanding and implementing appropriate PPE and following established safety protocols.</p> <p>6. Biohazardous waste management: Proper disposal methods for biohazardous materials and adherence to waste management regulations.</p> <p>7. Laboratory design and engineering controls: Considerations for designing and equipping a biosafety laboratory, including ventilation systems, containment facilities, and access controls.</p> <p>8. Security measures and biosecurity protocols: Ensuring the protection and security of biological materials, including strategies for preventing unauthorized access and potential misuse.</p> <p>9. Genetic engineering and molecular diagnostics: Applications of genetic engineering techniques and molecular diagnostics in the early detection and diagnosis of genetic diseases.</p> <p>10. Tissue culture techniques: Principles and applications of tissue culture in the context of animal cell biology and biotechnology.</p> <p>11. Regulatory frameworks and ethical considerations: Understanding and complying with relevant regulations, guidelines, and ethical principles in biosafety and biosecurity practices.</p>

## MODULES DESCRIPTION

	12. Communication and teamwork in biosafety: Effective communication, collaboration, and teamwork within a biosafety framework, including reporting incidents and sharing information.
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### Learning and Teaching Strategies

#### استراتيجيات التعلم والتعليم

<b>Strategies</b>	Demonstration and Practice: Provide hands-on demonstrations and practice opportunities for students to learn and apply biosafety and biosecurity techniques. Case Studies: Use real-life examples and scenarios to help students understand the practical application of biosafety and biosecurity measures. Visual Aids and Multimedia: Utilize visual aids and multimedia resources to enhance understanding of biosafety and biosecurity concepts.
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### Student Workload (SWL)

#### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	48	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	52	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	3.46
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	100		

### Module Evaluation

#### تقييم المادة الدراسية

## MODULES DESCRIPTION

		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
<b>Week 1</b>	Introduction to biosafety
<b>Week 2</b>	Introduction to biosecurity
<b>Week 3</b>	Chemical hazardous part 1
<b>Week 4</b>	Chemical hazardous part 2
<b>Week 5</b>	exam
<b>Week 6</b>	Radiation hazardous
<b>Week 7</b>	Waste management p1
<b>Week 8</b>	Waste management p2
<b>Week 9</b>	Shipping of hazard materials p1

## MODULES DESCRIPTION

<b>Week 10</b>	Shipping of hazard materialsp2
<b>Week 11</b>	BIOSECURITY
<b>Week 12</b>	BIOSECURTY -2
<b>Week 13</b>	Dual Use Research of Concern (DURC)
<b>Week 14</b>	Dual Use Research of Concern (DURC) 2
<b>Week 15</b>	exam
<b>Week 16</b>	Preparatory week before the final Exam

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
<b>Required Texts</b>	<input checked="" type="checkbox"/> Biological Safety: Principles and Practices, 5th Edition <input checked="" type="checkbox"/> Dawn P. Wooley (Editor),	Yes
<b>Recommended Texts</b>	<input checked="" type="checkbox"/> Biological Safety: Principles and Practices, 5th Edition <input checked="" type="checkbox"/> Dawn P. Wooley (Editor), Karen B. Byers (Editor)	No
<b>Websites</b>		

## MODULES DESCRIPTION

GRADING SCHEME مخطط الدرجات				
Group	Grade	التقدير	Marks (%)	Definition
<b>Success Group (50 - 100)</b>	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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## MODULES DESCRIPTION

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