Ministry of Higher Education and Scientific Research - Iraq
AL Mustaqba University
College of science
Department of biology

"COURSE PORTFOLIO"

Module Information معلومات المادة الدراسية					
Module Title	**Biochemistry II**			**Module Delivery**	
Module Type	**Basic**			✓ **Theory** ✓ **Lecture** ✓ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**Bio-**				
ECTS Credits	**7.0**				
SWL (hr/sem)	**175**				
Module Level	**3**	**Semester**	**1**		
Department	**Biological**	**College**	**College of Science**		
Module Leader	**M.M. Saja Jawad Obeid**	**E-mail**	**saja.jawad.abaid@uomus.edu.iq**		
Module Leader's Acad. Title		**Module Leader's Qualification**			
Module Tutor	**Name (if available)**	**e-mail**	**E-mail**		
Peer Reviewer Name	**Name**	**e-mail**	**E-mail**		
Scientific Committee Approval Date		**Version Number**			

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

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	64	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	111	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.40
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	175		

Relation with other Modules:-

	Ministry of Higher Education and Scientific Research - Iraq AL Mustaqba University College of science Department of biology	

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

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

COURSE DESCRIPTION:	Students will learn how biochemical reactions support physiological functions and how alterations in biochemical pathways can lead to disease. Laboratory sessions focus on qualitative and quantitative analysis of biomolecules, enzyme activity assays, and biochemical techniques used in medical and research laboratories.
Module Aims أهداف المادة الدراسية	1. Introduce students to the major biomolecules and their biological functions. 2. Provide insight into metabolic pathways and cellular energy production. 3. Study the structure and function of proteins and enzymes. 4. Analyze how biochemical reactions support physiological processes. 5. Develop laboratory skills for detecting and analyzing biomolecules. 6. Prepare students to understand diseases caused by metabolic disorders.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**المعارف والفهم (Knowledge and Understanding)** 1. شرح تركيب ووظيفة الجزيئات الحيوية الأساسية. 2. فهم المسارات الأيضية الرئيسية وأهميتها في وظائف الخلية. 3. وصف آلية عمل الإنزيمات والعوامل المؤثرة عليها. **المهارات الذهنية (Cognitive Skills)** 4. تحليل التفاعلات الكيميائية الحيوية وربطها بالعمليات الحيوية داخل الجسم. 5. تفسير الاضطرابات الناتجة عن خلل في المسارات الأيضية. **المهارات العملية (Practical Skills)** 6. إجراء الاختبارات المخبرية للكشف عن البروتينات، الدهون، السكريات، والإنزيمات. 7. استخدام الأجهزة المخبرية في القياسات والتحليل البيوكيميائي.
Indicative Contents المحتويات الإرشادية	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
1- Required textbooks		No
2- Main references (sources)		No
A- Recommended books and references (scientific journals, reports, etc.)		No

Grading Scheme
مخطط الدرجات

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

COURSE SCHEDULE:-

Week	hours	Topics Covered	Learning Outcomes
1	2	Carbohydrate Metabolism	
2	2	Carbohydrate digestion, absorption, anaerobic oxidation	
3	2	Lipid metabolism, bile acids and salts	
4	2	Osmotic balance - Protein metabolism	
5	2	Chemical transformations of amino acids	
6	2	End products of amino acid breakdown	
7	2	Interrelationship between the metabolism of biological microorganisms	
8	2	Hormone metabolism	
9		Biosynthesis of sugars	
10-11	2	Photosynthesis	
12-13	2	Synthesis of disaccharides	
14-15	2	General review	
Final Exam			

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
Week	**Material Covered**
Week 1	**Qualitative Analysis of Lipids**
Week 2	**Solubility Test**
Week 3	**Copper Acetate Test**
Week 4	**Foliage and Sedimentation Test**
Week 5	**Lieberman Cholesterol Test**
Week 6,7	**Dentan Selection**
Week 8	**Qualitative Test of Amino Acids**
Week 9	**Biuret Test**
Week 10	**Xanthopronic Test**
Week 11	**Nylon and Rose Case Test**
Week 12	**Sulfur-Bromine Water Test**
Week 13	**Histidine Test**
Week 14	**Electrophoresis Chamber for Amino Acid**

Learning Outcomes and Assessment Methods for " Immunology " Course.

Topics Covered	Learning Outcomes	Strategies for Achieving Outcomes	Assessment Methods
Carbohydrate Metabolism	1-6	Report Writing, Field Visits, Theoretical Lectures, Scientific Films, Exploratory Work Teams.	Quizzes, Major reports, discussions during lectures, Written Exams, and oral exams.
Carbohydrate digestion, absorption, anaerobic oxidation	1-3	Problem-Based Learning, Report Writing, Field Visits, Scientific Trips, Theoretical Lectures, Small Group Discussions, Scientific Films, Exploratory Work Teams.	Seminars, Major reports, and discussions during lectures. Written Exams, oral exams.
Lipid metabolism, bile acids and salts	3-6	Problem Based Learning, Report Writing, Theoretical Lectures, Small Group Discussions, Scientific Films.	Quizzes, discussions during lectures, Written Exams, homework, and oral exams.
Osmotic balance - Protein metabolism	1-6	Report Writing, Scientific Trips. Theoretical Lectures, Small Group Discussions, and Scientific Films.	Seminars, Major reports, and discussions during lectures. Written Exams, oral exams.
Hormone metabolism	1-3	Theoretical Lectures, Small Group Discussions,	Seminars, quizzes, discussions during lectures, Written Exams, and oral exams.
Biosynthesis of sugars	1-6	Problem-Based Learning, Report Writing, Field Visits, Scientific Trips, Theoretical Lectures, Small Group Discussions, Scientific Films, and Exploratory Work Teams.	Seminars, quizzes, Major reports, Written Exams, homework, and oral exams.
Photosynthesis	2-3	Problem-Based Learning, Theoretical Lectures, Small Group Discussions.	Quizzes and discussions during lectures. Written Exams, Homework.

Module Evaluation:-

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

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

Activity types	Structured SWL	Un structured SWL	No. of weeks	Time Factor	SWL (hr)
Class	32	66	15	2	98
Lab.	32	45	15	2	77
Tutorial					
Self Study		7.40	15		7.40
Quizzes	2		2	30 min.	2
discussions during lectures	5		15	20 min.	5
Projects / Lab.	15	2	15	1 hr.	16
Seminar	2	5	1	15 min.	12
Assignments, Home Work		4	1		4
Report		10	1		10
Midterm Exam (10%)	4		1		4
Final Exam (50%)	4		1		4
		Total SWL (hr/ Semester)			175
		ECTS			7