Ministry of Higher Education and Scientific Research - Iraq
University of Al-Muthanna
College of Applied Medical Sciences
Department of Environmental Health

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Biochemistry**			**Module Delivery**	
Module Type	core			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	ENH-1206				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	1		**Semester of Delivery**	2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	**Haider Shanshool Mohammed**		**e-mail**	Haider.shanshool@mu.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	**Haider Shanshool Mohammed**		**e-mail**	Haider.shanshool@mu.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	04/3/2025		**Version Number**	1.0	

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

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	Life is driven by biochemical reactions. Biochemistry is an introductory module providing the essentials for understanding all living processes. Biochemistry is the study of how our bodies utilize the nutritional substances in our diet to make building blocks, fuels, and communication molecules for our cells. It also includes the processes by which we convert chemicals within our bodies and eliminate chemicals from our bodies. The students study carbohydrates structure , lipid structure protein structure, vitamin structure , DNA structure , enzyme and inhibitor basic .understanding how each of these processes function and shape the living cell. Practical sessions offer you vital hands-on experience, learning key techniques and how to apply them. Core biochemical experience is highly relevant to applications in medical science. This module provides the foundation from which you may progress to higher level modules in Medical biochemistry, diagnostic biochemistry, clinical biochemistry, Bioinorganic Chemistry and Pharmacology.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	On successfully completing the module the students able to... 1. Explain the basic concepts of biochemistry 2. Recall the range and structures of biological molecules 3. Summarize the relationship between chemical structure and biological function 5. Communicate key practical skills relating specifically to biochemistry 6.Describe the basic principles of biochemistry/chemical biology 7.Evaluate essential key facts and theory in a subdiscipline of the biosciences 8.Describe and begin to evaluate aspects of biochemistry with reference to textbook material
Indicative Contents المحتويات الإرشادية	1- Definition, fuctions of carbohydrates , classification, cyclic structures and mutarotation). 2- Monosaccharides, monosaccharides of biological importance, important properties of monosaccharides). 3- Disaccharides, most common disaccharides, properties of disaccharides and oligosaccharides. 4- Types of polysaccharides, types of heteropolysaccharides and proteoglycans. 5- Definition , fuctions of lipids, classification of lipids, derived lipids and

	compound lipids. 6- Fatty acids, nomenclature of fatty acids, essential fatty acids, non essential fatty acids. 7- (definition , fuctions of amino acid ,classification and structure of amino acids). 8- Definition , fuctions of protein , ,classification and structure of some protein. 9- Definition , fuctions of enzymes , 10- Nomenclature and classification of enzymes, specificity of enzymes , coenzyme . 11- Mechanism of enzyme action, models of enzyme-substrate complex formation 12- Factors affecting enzyme action and type of enzyme inhibition 13- Definition, classification, water-soluble vitamins(b and c). 14- Fat-soluble vitamins(e,d,a and k). 15- Pyrimidine and purine bases.

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	**A- Methods of teaching and learning** **1- Using a Bower point to clarify the theoretical aspect.** **2- Use of visual aids.** **3- Use of practical tools.** **4- quiz assignments and posts inside the hall.** **B- Evaluation methods** **1- Practical tests** **2- Theoretical tests** **3- Reports and studies** **4- quiz assignment with self-solving questions** **5- Grades determined by homework**

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	76	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	99	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.5
Total SWL (h/sem)	175		

الحمل الدراسي الكلي للطالب خلال الفصل	

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	5	7% (10)	3,5,8,10,13	1and 2-3and 4-5and 6-7,8,9and 10-11and 12
	Assignments	5	6% (10)	15	LO # 3, 4, 5, 6,7,and 9
	Projects / Lab.	6	6% (10)	15	
	Report	1	6% (10)	12	LO # 5, 8 and 9
Summative assessment	Midterm Exam	8	15% (10)	8	LO # 1-8
	Final Exam	14	60% (50)	16	
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction of biochemistry)2 hrs.)
Week 2	Carbohydrate)2 hrs.)
Week 3	Carbohydrate (monosaccharides)) 2 hrs.)
Week 4	Carbohydrate (disaccharides)) 2 hrs.)
Week 5	Carbohydrate(polysaccharides)) 2 hrs.)
Week 6	Lipids)2 hrs.)
Week 7	Fatty acids)2 hrs.)
Week 8	**Exam**
Week 9	Amino acids)2 hrs.)
Week 10	Proteins)2 hrs.)
Week 11	Enzymes)2 hrs.)
Week 12	Mechanism of enzymes action and enzyme inhibition)2 hrs.)
Week 13	vitamins- water-soluble vitamins)2 hrs.)
Week 14	Vitamins-fat-soluble vitamins.) 2 hrs.)
Week 15	Essential of nucleic acid)2 hrs.)

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Introduction to carbohydrate tests)2 hrs.)
Week 2	Benedict's and Barfoed's Test)2 hrs.)
Week 3	Iodine and Seliwanoff's Test)2 hrs.)
Week 4	Molisch's and Fehling's Test)2 hrs.)
Week 5	Bial's and Osazone Test)2 hrs.)
Week 6	Lipid tests: Solubility)2 hrs.)
Week 7	Tests for unsaturation)2 hrs.)
Week 8	Tests for Glycerol)2 hrs.)
Week 9	Reaction of soap)2 hrs.)
Week 10	Detection of cholesterol)2 hrs.)
Week 11	Precipitation Reactions of Proteins)2 hrs.)
Week 12	Ninhydrin reaction)2 hrs.)
Week 13	Biuret test)2 hrs.)
Week14	Xanthoprotic and Millon's test)2 hrs.)

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	MN Chatterjea and Rana Shinde . Medical chemistry.2012.8th edition. ISBN 978-93-5025-484-4	Yes
Recommended Texts	Principles of Biochemistry (Lehninger Principles of Biochemistry) - Z-Library	No
Websites		

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

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