



CIHAN UNIVERSITY-SULAIMANIYA

Course Outline

2023-2024

Address:
Chwarchra-Opposite to Family Mall
Sulaymaniyah City
Kurdistan Region-Iraq
Tel: 07714695656,
email: presidency@sulicihan.edu.krd

MODULE DESCRIPTION FORM

Module Information			
Module Title	Biochemistry		
Module Type	Theory & practical	<input type="checkbox"/> Theory <input type="checkbox"/> Lecture <input type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar <input type="checkbox"/> Report <input type="checkbox"/> Extra activity	
Module Code			
Language	English		
ECTS Credits	7		
Module Level			
Administering Department	MMB	College	Health Sciences
Lecturer	Anvar Soleimani , Darya Shorsh		
Academic Title	Lecturer	Qualification	PhD
Module Tutor		e-mail	Anvar.soleimani@sulicihan.edu.krd Darya.shorsh@sulicihan.edu.krd
Peer Reviewer Name		e-mail	
Scientific Committee Approval Date		Version Number	
Cycle of Study	Bachelor	Form of Education	Full time

Relation with other Modules			
Prerequisite module		Semester	
Co-requisites module		Semester	

Cihan University-Sulaimaniya?



College of

Department:

ANS

Discipline:

Stage: 2

Total Contact Hours:	56
Total Self Study Hours:	133
Total No. Hours:	189
ECTS:	7

No. of Weeks	Contact Hours					Self-Study					
	Theoretical	Practical	Lab	Project	Visit	Quiz	Reading	Assignment	Report	Midterm Exam.	Final Exam.
1st Week (Introduction)	2		1								
2nd Week	2	1	1				4	2		15	30
3rd Week	2	1	1			2	4		2		
4th Week	2	1	1				4				
5th Week	2	1	1	1		2	4		2		
6th Week	2	1	1				4	3			
7th Week		1	1								
8th Week	2	1	1				4			20	30
9th Week	2	1	1			2	4	3	2		
10th Week	2	1	1	1			4				
11th Week	2	1	1				4		2		
12th Week	2	1	1	1			4				
13th Week	2	1	1				4		2		
14th Week	2	1	1				4			20	30
15th Week (Pr. Final Ex											
16th Week (Final Exam.)											
TOTAL	26	13	14	3			48	8	10	35	30

Delivery Plan (Weekly Syllabus)

	Material Covered
Week 1	Introduction to Biochemistry
Week 2	Carbohydrates Part I: Classification of carbohydrates. definition, function, and examples of monosaccharides disaccharides, and polysaccharides. GAGs, and examples of GAGs.
Week 3	Carbohydrate part II: Digestion and Absorption of Carbohydrates. Carbohydrate metabolism disorders including types of diabetes mellitus
Week 4	Amino acids and Peptides: types and structure of amino acids, essential and nonessential amino acids, biological importance of amino acids and peptides.
Week 5	Proteins: structure of a protein from amino acid sequence to quaternary structure of proteins. Types of proteins and their function.
Week 6	Enzymes: definition of enzyme and their Classification. How enzymes catalyze biological reactions, Factors affecting enzyme activities.
Week 7	Midterm theoretical Exam
Week 8	Lipids: types of lipids and their classification. Function of lipids. Fatty acid structure and essential fatty acids. Differences between oil and fat and saturated fatty acids with unsaturated fatty acids. Phospholipids and types of phospholipids.
Week 9	Nucleic Acids: Structure of Nucleic acids including DNA and RNA. Structure of Nucleotides. Differences between RNA and DNA
Week 10	Glucose Metabolism: Glycolysis, Aerobic and anaerobic respiration, Gluconeogenesis. TCA cycle, Electron Transport Chain
Week 11	Acid-base Balance: pH definition, Physiological Buffer systems, acid-base disorders
Week 12	Electrolytes: Cations and Anions, Physiological role of Electrolytes, Anion GAP
Week 13	Vitamins: Water and lipid soluble vitamins. Structure and function of vitamins plus their toxicities and RDA
Week 14	Nonprotein nitrogenous compounds: metabolism and clinical value of Creatine, Urea, and Uric acid
Week 15	Final Practical Exam
Week 16	Final Theoretical Exam

Delivery Plan (Weekly Lab. Syllabus)

	Material Covered
Week 1	Lab Introduction and safety
Week 2	Qualitative tests in Laboratory (Molish and Iodine) tests
Week 3	Spectrophotometry- Understanding Light and Matter interactions
Week 4	Spectrophotometry- Determination of Lambda Max
Week 5	Determination of Serum Glucose
Week 6	Determination of serum TG
Week 7	Determination of Serum Cholesterol
Week8	HDL / LDL Cholesterol test
Week9	Determination of Serum Urea
Week 10	Determination of Serum Creatinine
Week 11	Determination of AST and ALT
Week 12	Determination of Serum Bilirubin
Week 13	Measuring the concentration Alp and LDH (Liver Panel)
Week 14	Determination of amylase
Week 15	Review
Week 16	Final Exam

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	<p>The primary aim of this biochemistry module is to introduce students to the fundamental principles that govern biochemical processes in living organisms. Students will explore the structure and function of essential biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, while also developing an understanding of the key metabolic pathways involved in energy production and cellular function. Another objective of the module is to enhance students' laboratory skills, allowing them to perform both qualitative and quantitative biochemical tests. By the end of the course, students will be proficient in using techniques such as spectrophotometry to analyze biological samples. Additionally, the course aims to prepare students to interpret and apply biochemical data, particularly in the context of health sciences, where the understanding of metabolic disorders such as diabetes and liver diseases is critical.</p>
Module Learning Outcomes	<p>Upon successful completion of this module, students will have acquired the ability to explain the structure and function of important biomolecules and analyze how these molecules interact within various metabolic pathways. Students will demonstrate their ability to understand and evaluate key biochemical processes such as glycolysis, the TCA cycle, and the electron transport chain. They will also be able to apply their knowledge of enzymes and their regulatory mechanisms in biochemical reactions and explain the factors that influence enzyme activity. Through practical laboratory sessions, students will gain hands-on experience in performing biochemical assays, including the use of spectrophotometry to determine concentrations of substances in biological samples. Lastly, students will be expected to critically discuss the clinical relevance of biochemical pathways, particularly how abnormalities in these pathways can lead to diseases such as diabetes and other metabolic disorders.</p>

Learning and Teaching Strategies

Strategies	<p>This module will utilize a combination of lectures, laboratory practicals, group discussions, and independent study to ensure students develop both theoretical understanding and practical skills. Interactive lectures will provide the foundational knowledge of biochemical concepts, focusing on the structure and metabolism of carbohydrates, proteins, lipids, and nucleic acids. The practical laboratory sessions will allow students to apply these theoretical concepts through hands-on experimentation, such as conducting qualitative tests on biomolecules and analyzing enzyme activity using spectrophotometry. Group discussions will foster collaborative learning and problem-solving, with a focus on real-world case studies that explore the biochemical basis of metabolic diseases. Regular assignments and quizzes will assess students' progress and understanding, while encouraging consistent study. Independent study, including recommended readings and additional research, will enable students to further explore and deepen their knowledge of biochemistry. Through this blend of teaching methods, students will be prepared to engage with biochemistry at a deeper level, both in academic and clinical contexts.</p>
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Module Evaluation					
Assessment Types		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Attendance (Th & Pr)	4	4%		
	Assignments (Th)	2	2%		
	Activity (Th)	2	2%		
	Lab. Report (Pr)	8	8%		
	Quizzes (Th & Pr)	8	8%		
	Lab. rep. Presentation	4	4%		
	Lab. Attitude (Pr)	2	2%		
Summative assessment	Midterm Exam (Th)	2hr	20%	7 th	
	Final Pr. Exam	2hr	20%	15 th	
	Final Exam (Th)	3hr	30%	16 th	
Total assessment			100% (100 Marks)		

Learning and Teaching Resources		
	Text	Available in the Library?
Required Texts	Lippincott, Essential of Biochemistry,	

Recommended Texts	Lehninger Principles of Biochemistry Harper's Illustrated Biochemistry	
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
<p>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.</p>				
<ul style="list-style-type: none"> ➤ Cycle of studies - choose one of the three options: Bachelor «1», Master «2», PhD. «3» ➤ (Exam: Oral Examination, Written Exam), and (Continuous Evaluation(CE), Portfolio). ➤ Discipline status (Content) - for the Bachelor level, choose one of the options: FD (Fundamental (General) Discipline), PF (Preparatory Disciplines in the Field), SD (Specialty Disciplines), CD (Complementary Disciplines), DU (Disciplines based on the University's options). ➤ Discipline status (compulsoriness) - choose one of the options <ol style="list-style-type: none"> a. MD (Mandatory discipline) b. OD (Optional Discipline) c. ED (Elective (Facultative) Discipline). 				

Approved by Head of the Branch / Department	
Signature	
Date	

Name	
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Approved by Curriculum Development Committee and Bologna Process Committee

Signature	
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Date	
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Name	
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