



وكالة الجامعة للشؤون التعليمية
البرامج الدراسية والتطوير

(5)

مختصر توصيف الكيمياء الحيوية

Biochemistry

(Course Syllabus)

	كيمياء حيوية	:
	BIOC-221	:
	CHEM-211 الكيمياء العضوية	:
	-	:
		:
	3	:
Module Title:	Biochemistry	
Module ID:	BIOC-221	
Prerequisite (Co-requisite) :	Organic chemistry, CHEM-211	
Co-requisite :	-	
Course Level:	4 th level	
Credit Hours:	3	

:(Course Information) *

Module Description

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The course of Biochemistry is dealing with the study of chemical structure, classifications and biological functions of the main biomolecules such as proteins, enzymes, carbohydrates, lipids, hormones, vitamins and nucleic acids. As well as studying the bioenergetics and metabolism of biomolecules. It is also including practical qualitative and quantitative assays for some biomolecules.

Module Aims

أهداف المقرر :

1	Studying the chemistry of carbohydrates, their classifications, nomenclature, biological functions, and the chemical reactions of carbohydrates.	1
2	Studying the chemistry of fatty acids and lipids, their classifications, their biological functions and the chemical reactions of fatty acids and lipids.	2
3	Studying the chemistry of amino acids and proteins, their classifications, their biological functions, and chemical reactions of amino acids and proteins.	3
4	Studying the enzymes, their classifications and their role in the biological reactions as well as their diagnostic role in many diseases.	4
5	Studying the chemical structure of the nucleic acids and their biological functions.	5
6	Studying the structure of vitamins and minerals, their types, their biological functions, and diseases related to vitamin deficiency.	

7	Studying the hormones, different types of hormones and their biological role in the human body.	
8	Studying the Bioenergetics and metabolism of some biomolecules.	
	Practical part:	
	Qualitative and quantitative assays for some biomolecules such as carbohydrates, lipids, proteins and vitamins.	

Learning Outcomes:

مخرجات التعليم:

1	Knowledge about the principles of biochemistry.	
2	Knowledge about monosaccharides, disaccharides, oligosaccharides and polysaccharides, aldoses, ketoses, reduced and non-reducing sugars, important reactions of carbohydrate and glycoside bond formation.	
3	Knowledge about triglycerides, phospholipids, steroids, structure of saturated and unsaturated fatty acids, lipids and the biological role of lipids.	
4	Knowledge about the structure of amino acids, essential and nonessential amino acids, synthesis of amino acids, reactions of amino acids, peptide bond formation, structure and classes of proteins, enzymes role and their classifications, coenzymes and enzyme inhibitors.	
5	Knowledge about RNA, DNA, vitamins, minerals and hormones.	
6	Knowledge about metabolism, anabolism, catabolism.	
7	Knowledge of the most important practical methods for qualitative and quantitative assays of some biomolecules such as carbohydrates, lipids, proteins and vitamins.	

Course Contents:

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التدريس (Hours)	الأسابيع (Weeks)	(Subjects)
3	1	Introduction to Biochemistry
12	3	Carbohydrates
8	2	Fatty acids and lipids

12	3	Amino acids and proteins
8	2	Enzymes
4	1	Nucleic acids and nucleotides
4	1	Vitamins and minerals
4	1	Hormones
8	2	Bioenergetics and Metabolism
Practical Part:		
28	14	Qualitative and quantitative assays of some biomolecules such as carbohydrates, lipids, proteins and vitamins.

Textbook and References:

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ISBN	Publishing Year	Publisher	اسم المؤلف (رئيسي) Author's Name	Textbook title
13 9781429234146, 10 1429234148	2012	W.H..Freeman & Co Ltd,	David L. Nelson and Michael M. Cox	Lehninger: Principles of biochemistry
	Publishing Year	Publisher	اسم المؤلف (رئيسي) Author's Name	Reference
13 9781429234146, 10 1429234148	2008	W.H..Freeman & Co Ltd,	David L. Nelson and Michael M. Cox	Lehninger: Principles of biochemistry
0-13-250882-6	2006	Boston, Massachusetts: Pearson Prentice Hall	Campbell, Neil A.; Brad Williamson; Robin J. Heyden	Biology: Exploring Life.

