

Course Syllabus of Introduction to Biochemistry

Faculty : Medicine and health sciences

Department: Basic Sciences

Program : Bachelor of Medicine and Surgery

I. General information about the course instructor :

Name	Dr. Ali Ali Ahmed Alhaj	Office Hours (3 Hours Weekly)					
Location & phone number	713465553/ 4114	Sat	Sun	Mon	Tue	Wed	Thu
Email	alhajj20@yahoo.com			√			

II. General information about the course:

1	Course Title :	Introduction to Biochemistry					
2	Course Code and Number :	BMD04					
3	Credit Hours :	Credit Hours					Total
		Theoretical	Seminar/Tutorial	Practical	Clinical	Training	
		2	-	1	-	-	
4	Study Level and Semester:	1 st year /1 st semester					
5	Pre-requisites:	None					
6	Co-requisites:	None					
7	Program in which the course is offered:	Bachelor of Medicine and Surgery					
8	Teaching Language:	English					
9	Instruction location:	University of Science and Technology, Sana'a					

III. Course Description

This course provides students with basic knowledge about structure and properties of main biomolecules in human body, such as amino acids, proteins, carbohydrates, lipids, and nucleic acids. The course emphasizes the relationship between protein structure and its biological function. In addition, it discusses the role of phospholipids in determining the properties of biological membranes and their function.

IV. Course Aims:

1. To illustrate the students the importance of biomolecules.
2. To enable the student to be understand structure and classification of carbohydrates, Lipids, proteins, enzymes, vitamins, nucleotides and nucleic acids.
3. Acquire the students laboratory skills to be identify carbohydrates, Lipids, enzymes, proteins, nucleotides and nucleic acids.
4. To familiarizes the students with basic principles of molecular biology and protein synthesis.
5. To makes the student oriented with the physico-chemical basis of the biological systems, and related clinical problems.

V. Course Intended Learning Outcomes (CILOs) :

1. Describe the structure, importance and properties of carbohydrates, lipids, proteins, lipids, enzymes, vitamins and nucleic acid.
2. Determine the relation between biochemistry and medicine
3. Interpret biochemical laboratory findings.
4. Perform some basic chemical testes to identify different sugars, lipids and proteins.
5. Interpret the results of performed tests on view of the theoretical study of normal and abnormal values.
6. Work effectively in a group in a lab or during preparation of seminars.
7. Respects the role of staff and co-staff members regardless of degree or occupation.

VI. Course Contents				
Theoretical Aspect:				
No.	Course Units	Sub-topics	Number of lectures	Contact Hours
	Functional groups of organic compounds	Carbonyl Group, Alcohols, Ethers, Carboxylic acid, Phenols, Thiols, Amines, Phosphate, Alkaloids, Caffeine, Nicotine, Amides, and Esters	1	2
	Acids, bases, and buffers	Definition and properties of acids and bases, strong acids and bases, weak acids and bases, pH scale, The importance of pH control, neutralization reactions, and buffer system	1	2
	Amino acids	General structure, functions, classification of amino acids (chemical, nutritional, Metabolic), derived amino acids and Properties of Amino Acids	1	2
	Proteins	Peptide formation, Biologically Active Peptides, protein classification according to (function, shape, and chemical classification), protein denaturation	2	4
	Enzymes	Definition and distribution of enzymes, enzyme names, active sites, Cofactors, Zymogens, Lysozymes, factors affecting reaction velocity, inhibition of enzyme activity, regulation of enzyme activity, enzymes and isoenzymes in clinical diagnosis	2	4
	Nucleic acids	Function, nucleotide structure, Structure of DNA, Structure and types of RNA	2	4
	Carbohydrates	Definition, importance, Classification, derivatives of monosaccharides, disaccharides, polysaccharides	2	4
	Lipids	Definition, functions, classification, fatty acids, steroids	2	4
	Vitamins	Definition, functions, classification, clinical indications	2	4
Total			15	30

Second: Practical/Tutorial/Clinical Aspects :			
No.	Practical/Tutorial/Clinical topics	No. of Labs	Contact Hours
1.	Identification of functional groups of organic compounds	1	2
2.	Identification of acids, bases and buffers	1	2
3.	Identification of amino acids identification	1	2
4.	Proteins identification	3	6
5.	Enzymes	3	6
6.	Carbohydrates identification	4	8
7.	Lipids identification	1	4
Total		15	30