

**Template of Course Syllabus of Introduction of biochemistry**

Faculty : Medicine and Health sciences

Department: Health Sciences

Program Bachelor in Clinical Nutrition and Dietetic

I. General information about the course instructor :									
Name	Dr. Abdulhabib Alqubaty			Office Hours(3 Hours Weekly )					
Location & phone number	770145433			Sat	Sun	Mon	Tue	Wed	Thu
Email	Alqubaty71@gmail.com					√			

II. General information about the course :						
1.	Course Title:	Introduction of biochemistry				
2.	Course Code and Number :	BND121				
3.	Credit Hours :	Lecture	Seminar/Tutorial	Practical	Training	Total
		2		1		3
4.	Study Level and Semester:	1st year /2nd semester				
5.	Pre-requisites :	BHS110- BHS120				
6.	Co-requisites :	None				
7.	Program in which the course is offered	Bachelor in Clinical Nutrition and Dietetic				
8.	Teaching Language:	English				
9.	Instruction location:	University of Science and Technology, Sana'a, Yemen				

**III. Course description:**

This course is concerned with the essential knowledge about structure, classification, function and nutritional importance of macro biomolecules (amino acids, proteins, enzymes, carbohydrates, lipids, and nucleic acids) and micro biomolecules (vitamins and minerals) in human body. The course also explains the relationship between protein structure and its biological function. The course is based on lectures as well as seminars and group discussion. The students will be evaluated through report, written exam and practical exam. General& organic chemistry and Biology are prerequisite courses.

عميد الكلية:  
د. عبد الله الحلافي

رئيس القسم:  
د. عبد الحبيب القباطي

جامعة العلوم والتكنولوجيا  
إدارة ضمان الجودة والاعتماد  
معتد  
8 / 12  
APPROVED

المراجع:  
د. مجاهد نصار

الموصف:  
د. عبد الحبيب القباطي

**IV. Course Aims:** This course is aimed to:

1. Enable students to illustrate the biochemical importance of biomolecules.
2. Familiarize the students with structure and classification of carbohydrates, lipids, proteins, enzymes, vitamins, nucleotides and nucleic acids.
3. Learn students the different classes and properties of carbohydrates, lipids, proteins, lipids, enzymes, vitamins and nucleic acid.
4. Provide student with the knowledge to understand the basic principles of molecular biology and protein synthesis.

**V. Course Intended Learning Outcomes (CILOs) :**

1. Describe the structure of nutrient molecules as carbohydrates, lipids, amino acids, vitamins and nucleotides.
2. Mention the biochemical importance of biomolecules.
3. Illustrate different classes and properties of carbohydrates, lipids, proteins, lipids, enzymes, vitamins and nucleic acid.
4. Interpret the observations of chemical tests to identify unknown sugar, lipids or protein solutions.
5. Evaluate and correlate laboratory results for calcium and vitamin c concentration in nutrient with the recommended amount.
6. Perform some basic chemical testes to identify different sugars, lipids and proteins.
7. Estimate the concentration of certain vitamin and minerals.
8. Work effectively in a group in a lab or during preparation of seminars.

**VI. Course topics and sub-topics (theoretical and practical) with contact hours and alignment to CILOs****Topics/Units of Course Contents****First: Theoretical Aspects**

No.	Course Topics/Units	Sub-topics	No. of Weeks	Contact Hours
1	Introduction	Biomolecules and water metabolism	1 <sup>st</sup>	2
	Body fluids	Osmotic and oncotic forces, Acid base balance, buffers	2 <sup>nd</sup>	2
2	Amino acids	General structure, properties, classification of amino acids (chemical, nutritional, metabolic), derived amino acids	3 <sup>rd</sup>	2
3	Proteins	Peptide formation, biologically active peptides, protein function and classification according to (function, shape, and chemical classification), protein conformation (three dimensional structure) and denaturation	4 <sup>th</sup> , 5 <sup>th</sup>	4
4	Enzymes	Definition, classification 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	6 <sup>th</sup>	2
5	Nucleic acids	Function, nucleotide structure, Structure of DNA,	7 <sup>th</sup>	2

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		Structure and types of RNA		
6	Mid exam		8 <sup>th</sup>	2
7	Carbohydrates	Definition, importance, classification, derivatives of monosaccharides, disaccharides, polysaccharides	9 <sup>th</sup> , 10 <sup>th</sup> , 11 <sup>th</sup>	6
8	Lipids	Definition, functions, classification, fatty acids, triglyceride, phospholipids, glycolipids, eicosanoides, steroids and lipoproteins	12 <sup>th</sup> , 13 <sup>th</sup>	4
9	Vitamins	Definition, functions, classification, requirements, clinical indications and deficiency.	14 <sup>th</sup>	2
10	Minerals	Functions, sources, classification, requirements clinical indications and deficiency.	15 <sup>th</sup>	2
11	Final exam		16 <sup>th</sup>	2
<b>Total number of weeks and hours</b>			<b>15</b>	<b>30</b>

<b>Second: Practical/Tutorial/Clinical Aspects</b>			
<b>No.</b>	<b>Practical/Tutorial/Clinical topics</b>	<b>No. of Weeks</b>	<b>Contact Hours</b>
1	Lab safety	2 <sup>nd</sup>	2
2	Identification of amino acids	3 <sup>rd</sup>	2
3	Proteins identification	4 <sup>th</sup>	2
4	Lipids identification	5 <sup>th</sup>	2
5	Enzymes kinetics	6 <sup>th</sup>	2
6	Monosaccharides identification	7 <sup>th</sup>	2
7	Disaccharides identification	8 <sup>th</sup>	2
8	Polysaccharides identification	9 <sup>th</sup>	2
9	General scheme	10 <sup>th</sup>	2
10	Estimation of vitamin C from fruit juice.	11 <sup>th</sup>	2
11	Estimation of calcium from milk.	12 <sup>th</sup>	2
12	Final practical examination	13 <sup>th</sup>	2
<b>Total number of weeks and hours</b>		<b>12</b>	<b>24</b>

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