

# Para-Medical Program

<b>Specialization</b>	المهارات المسانده
<b>Course Number</b>	020800161
<b>Course Title</b>	الكيمياء الحيويه
<b>Credit Hours</b>	(2)
<b>Theoretical Hours</b>	(2)
<b>Practical Hours</b>	(0)

### **Course description**

Biochemistry courses introduce fundamental knowledge about the structure and properties of biomolecules which constitute the framework of cells and tissues of the human body. These biochemicals are required for the completion of metabolic activities and biochemical processes which maintain and support life.

### **Course Objectives:**

- 1- Present essential information about biomolecules of life including :Carbohydrates,Lipids,Proteins and Enzymes,Nucleic Acids & Vitamins.
- 2-Learning about the chemical and physical properties of them and their classification.
- 3-Gain knowledge and experience about their characterization.
- 4-Understand the biochemical basis of some metabolic diseases.
- 5-Relation between levels of biomolecules in the human body and diseases.
- 6-Explain some reactions of biomolecules and daily life work.
- 7-Differentiation and interaction of these biomolecules .

### **General Description**

Unit Number	Unit Name	Unit Content	Time Required
1	Introduction	* Introduction to Biochemistry * Functional Groups in Biochemistry	
2	Carbohydrates ( Saccharides)	*Definition & General Properties *Occurrence * Biological Significance * <u>Classification:</u> 1- Monosaccharides: *Types *Physical and Chemical Properties * Biological Derivatives of Monosaccharides	

		2- Disaccharides:Types 3- Oligosaccharides 4-Polysaccharides:Types	
3	Lipids(Fats)	* Definition & General Properties *Occurrence * Biological Significance * <u>Classification of Lipids:</u> A- According to Structural Components: a-Simple Lipids:Definition & Examples b- Compound Lipids :Definition & Examples c- Derived Lipids :Definition & Examples B- According to Function:Storage & Structural Lipids * Fatty Acids : Types: Saturated and Unsaturated Fatty Acids :Definition & Examples Characteristics of Fatty Acids:1- Saponification 2- Hydrogenation of Oil *Saponification Number * Iodine Number * Acid Number	
4	Proteins	*Definition & General Properties * Amino Acids : Physical & Chemical Properties of Amino Acids * <u>Classification &amp; Types of Amino Acids:</u> A- Chemical Classification: Neutral, Basic & Acidic Amino Acids B –Biological Classification: Essential & Non Essential Amino Acids C- Metabolic Classification:Ketogenic & Glucogenic Amino Acids * Peptides : Definition & Classification: a- Monopeptides b- Oligopeptides c- Polypeptides * Peptides of Biological Importance:	

		<p>Glutathione, Oxytocin, Vasopressin (Antidiuretic Hormone), Insulin &amp; Glucagon</p> <p>* Types of Bonds in Proteins: Peptides, Disulfide, Hydrogen, Hydrophobic &amp; Electrostatic Bonds &amp; van der Waals Forces</p> <p>* Proteins: <u>Classification</u></p> <p>A- According to Shape : Fibrous &amp; Globular</p> <p>B- According to Biological Functions : Catalytic, Transport, Contractile, Projective, Storage, Mechanical, Regulatory &amp; Receptor Functions</p> <p>* Structure: Primary, Secondary, Tertiary and Quaternary Structures : Definition &amp; Examples</p> <p>* Enzymes : Definition &amp; General Properties</p> <p>A- <u>Classifications of Enzymes</u></p> <p>B- Specificity</p> <p>C- Factors Affecting Enzyme Activity</p> <p>D- Coenzymes</p> <p>E- Cofactors</p> <p>F- Inhibitors</p>	
5	Nucleic Acids	<p>Definition &amp; Types</p> <p>A- Functions &amp; Chemical Compositions</p> <p>B- Nucleosides</p> <p>C- Nucleotides</p> <p>D- Transcription</p> <p>E- Translation</p>	

6	Vitamins	<u>Definition &amp; Classification</u> A-Fat Soluble Vitamins: Definition, Examples ,Daily Requirement & Clinical Manifestations of Deficiencies  B-Water Soluble Vitamins: Definition, Examples ,Daily Requirement & Clinical Manifestations of Deficiencies	
---	----------	--	--

**References:**

1-Biochemistry, A Short Course. 2<sup>nd</sup> Edition, 2015. Fatima Mahmoud Al-Nashash. Al-Mojtama Al-Arabi Puplication, Amman.

2-Introduction to Biochemistry. 1st Edition, 2007. Samira Ghuneim. Dar Yafa Al-Elmia, Amman.

3- Nelson, D. L. & Cox, M. M. Lehninger Principles of Biochemistry. Freeman, 6th edition, 2013

4- Voet, D., Voet, J. G. & Pratt, C. W. Principles of Biochemistry. Wiley, 4th edition, 2013.

5- Berg, J. M., Tymoczko, J. L. and Stryer, L. Biochemistry. Freeman, 7th edition, 2011