

University of Management & Technology

School of Science **Department of Life Sciences**

BC-211 Amino Acids, Proteins, and Nucleic Acids					
Lecture Schedule	Monday and Wednesday	Semester	Spring 2019		
Pre- requisite	F.Sc. /A-level Chemistry	try Credit Hours 3+1			
Instructor(s)	Miss Braira Wahid	Contact Moodle link	braira.wahid@umt.edu.pk		
Office	2S-48	Office Hours	Displayed on Moodle		
Objectives	 This course aims to provide students with fundamental knowledge of the proteins and nucleic acids, as well as their function in the context of a living cell. To make students able to identify the structural elements of proteins and nucleic acids. 				
Expected Outcomes	 This course will give a grounding in a subject Of biochemistry that forms the basis of virtually all of the biological sciences. Many exciting discoveries made in this area have contributed to our understanding of life, This will also help in the solving of medical problems, and to the discovery and production of safe and effective drugs. 				
Course outlines	Amino Acids: Introduction, classification, properties of amino acids. Identification of amino acids by different methods. Biological role of amino acids. Proteins: Introduction to proteins and its types Acid- base properties of amino acids, pH dependent ionization of amino-acids, Identification of amino acids by different methods, Chemical and enzymatic reactions of amino acids, Structural organization of proteins, Protein denaturation and renaturation Nucleic acids: Brief introduction of nucleic acids, Composition and structure of DNA & RNA, Types of DNA and RNA, Function of the DNA & RNA, Compaction of DNA in nucleus, Extra nuclear DNA				
Text book & Reference	 D. Voet, J.G. Voet and C.W. Pratt 2002. Fundamentals of Biochemistry John Wiley and Sons. Inc., New York. J.M. Berg, J.L. Tymoczko and L. Stryer 2002. Biochemistry. 5th Edition. W. H. 				

book(s)	 3. T.M. Devlin (2002). T Edition. John Wiley and 4. N.M. Berg, J.L. Tymoc Freeman & Co Ltd; 	. M. Cox and D.L. Nelson 2005. Lehninger Principles of Biochemistry. 4th Edition,	
Grading Policy	 Quizzes Assignments Midterm Final term Practical 	10% 10% 25% 35% 20%	

Course Schedule

1	Week	Lecture #	Topics		
Zwitterions Zwitterions Classification of amino acids; acid-base properties of amino acids Optical activity of amino acids; Optical activity of amino acids; Isoelectric point (pl); separation and purification of amino acids; Identification of amino acids by different methods; chemical and enzymatic reactions of amino acids Introduction to proteins, classification; Structure and function of proteins Physical and chemical properties; Conjugated proteins Primary, secondary, tertiary and quaternary structure determination; Protein denaturation and folding; Interactions of proteins with other molecules Sulphase of protein analysis MIDTERMS Protein Function Reversible binding of protein to a ligand Oxygen binding proteins Sulphase of nucleotides and nucleic acids Nucleic acid structure Nucleic acid chemistry Other functions of nucleotides Nucleic acid chemistry Other functions of nucleotides	1	1	Introduction to amino acids and their structure		
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