

CHEM 360 Syllabus

Course Code	Course Name	Credits	Prerequisite(S)	Classification
CHEM 360	Organo-Biochemistry	3	CHEM 232	Department Requirement

Course Description The course describes the molecular foundation of the logic of life. It provides an introduction to molecules found in living systems. The structures of amino acids, nucleotides, lipids, sugars and the corresponding higher-order structures, proteins, nucleic acids, membranes, and polysaccharides will be studied.

Class

Scheduling Classes are held 2 times/week each for 80 minutes.

Textbook

1- Instant Notes-Biochemistry, 3rd Edition, David Hames ,Nigel Hooper, 2005, Taylor & Francis. 2- Biochemistry (Lippincott Illustrated Reviews Series) 7th Edition, by Denise Ferrier.

Lehninger Principles of Biochemistry, 6th Edition, David L. Nelson, Michael M. Cox, 2013, W. H. Freeman Company.

Course Coordinator

Dr. Heba A. Kashmery

Dr. Khalid A. Khan

Relationship to SOs

1	2	3	4	5	6
X	X				X

CLOs

By the end of this course student will be able to:

CLO1. Describe the chemical structures and processes of biological phenomena that involve the basic units of life. (SO1)

CLO2. Recognize the structure and function of carbohydrates, lipids, amino acids, proteins, nucleic acids and vitamins. (SO1)

CLO3. Apply condensation reactions to draw biomolecules from its monomer units. (SO2)

CLO4. Classify different isomer of carbohydrates. (SO2)

CLO5. Explain the characteristics of anabolic and catabolic metabolism and how ATP provides energy in biological system. (SO2)

CLO6. Corporate learning performance to represent short presentation. (SO6)

Contents

List of Topics	No. of Weeks
Chemistry is the Logic of Biological Phenomena.	1
Water: The Medium of Life.	1
Amino Acids and Polypeptides.	2
Structure of Proteins: Primary, Secondary, Tertiary, and Quaternary Structure.	1
Structure and Functions of Myoglobin and Hemoglobin.	1
Enzymes: Basic Concepts of catalysis, Classifications, Kinetics, and Inhibition. Coenzymes: Structure of NAD and FAD and their mechanism in biochemical redox reactions.	1
Carbohydrates: Structures, Classification, stereoisomerism.	2
Metabolism: Basic Concepts of catabolism and anabolism, Glycolysis, Citric Acid Cycle, Electron Transport Chain and Oxidative Phosphorylation.	1
Lipids: Structure and Classification, Lipid Metabolism: Oxidation and Biosynthesis.	2
Nucleosides, Nucleotides and Nucleic Acids.	1
DNA: Replication, Recombination & Repair, Protein Synthesis.	1
Vitamins, classification, importance, and deficiency.	1