FORMEN CHRISTIAN COLLEGE, LAHORE
Department of Chemistry

Biochemistry: CHEM 330/ENVR 330

Credits: 04 (3+1)

Instructor: Dr. Hira Khalid
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Prerequisite:

CHEM 160 or CHEM 261 or equivalent

Course contents:

Structure and physiological functions of primary metabolites like carbohydrates, proteins ,lipids and nucleic acids, nature and role of enzymes and co enzymes, metallo proteins, mechanism and kinetics of enzymes.

Student learning objectives

- To illustrate main concepts of Biochemistry, interactive lectures and discussion will be practiced. To ensure students understanding assessment in the form of quiz will be conducted and evaluated.
- To inculcate critical thinking and implementation of concepts in real world, concept based problems will be given for appraisal.
- Assignments and presentations will be given to the students requiring consultation of authentic books and sites in library. These assignments will have weightage in their final score.

Recommended books:

Principles of Biochemistry by Lehninger, 4th /5th Ed, Part II (Chapter 13-23), Part III
Fundamentals of Biochemistry by Donald Voet 3rd Ed, (Chapter 03-12)
Biochemistry (Lippincot's Illustrated Reviewes) 6th Ed, Unit I (Chapter 1-4)

Further Reading:

Basic Concepts in Biochemistry by Hiram F Gilbert, 2nd Ed
BIOS Instant Notes Biochemistry by David Hames & Nigel Hooper, 3rd Ed
Instructor Lectures and authentic Internet sources

Evaluation/Examination:

1.	Quizzes	10%
2.	Presentation	10%
3.	Assignments	05%
4.	Midterm Examination	20%
5.	Final Examination	25%
6.	Lab	25%
7.	Class participation	05%

Attendance

A student must be regular and punctual. He/she should normally attend al classes. 80% attendance is must to qualify to sit in the final examination.

"Anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young."

Week Plan/Semester Breakup

WEEK	TOPIC/ACTIVITY
Week # 1	• Introduction of the instructor, the students and the course. Learning goals and expectation from the students. The evaluation and assessment criteria and class handouts will be given. • Introduction to proteins and amino acid, classification, properties • **QUIZZ 1 (Class Activity)**
Week # 2	• Titration Curves of amino Acids and their dissociation • **QUIZZ 2** • Chemical and physical properties of proteins and their identification tests • Video demonstration; structure and denaturation of proteins • Purification of Protein (Electrophoresis and Ion-exchange chromatography) • Amino Acid analysis
Week # 3	• Nature of enzymes, Role of enzymes and co enzymes • Metallo proteins and enzymes, Mechanism of enzyme action • Kinetics and regulation of enzymes, Industrial applications of enzymes **QUIZZ 2**
Week # 4	• Nucleosides and nucleotides, biological importance, Types of nucleic acids RNA & DNA, Structure (bases, sugar, phosphodiester bonds) and function of nucleic acids
Week # 5	• DNA/RNA, DNA Replication and repair, Replication and its importance • **QUIZZ 3**
Week # 6	• **MID TERM**
Week # 7	• carbohydrates classification, chemistry and functions of carbohydrates • Monosaccharides • Disaccharides • Polysaccharides
Week # 8	• chemicals properties, identification test **(Class Activity)** • **QUIZZ 4**
Week # 9	• Derivatives of carbohydrates • applications and uses with examples **PRESENTATIONS**
Week # 10 & 11	• **PRESENTATIONS**
Week # 11	• **GEL ELECTROPHORESIS DEMONSTRATION**
Week # 13	• **RECAPPING THE COURSE +FEED BACK**
Week # 14	• **FINAL EXAM**