

Department : **Clinical Laboratory Sciences**
Course Number : **CLS 232**
Course Title : **Clinical Biochemistry (I)**
Credit Hours : **3 + 1 = 4**

Course Description:

This course illustrates structures and functions of biomolecules which includes carbohydrates, proteins, lipids, nucleic acids, enzymes and hormones.

In the practical part of this course, students study the detection and quantitative determination of some of these biomolecules.

CLS 232: Lectures Outline

Weeks	Subjects
1.	Acids, bases, pH scale, buffer system
2.	Chemical bonds
3.	Amino acids: structure, physical and chemical properties
4.	Peptide bonds, proteins: types, structure, functions
5.	Protein purification
6.	Nucleotides and nucleic acids
7.	Enzymes
8,9.	Carbohydrates
10,11.	Fatty acids and lipids
12.	Hormones
13.	Vitamins

CLS 232: Laboratory Schedule

Weeks	Subjects
1.	Laboratory Safety
2.	pH meter + colour tests of protein

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3. Colour tests of amino acids
4. Estimation of protein:
Precipitation of proteins, plasma, serum and urine
protein Electrophoresis and TLC
5. Spectrophotometer + Enzyme kinetics
6. General colour tests of carbohydrates
7. Colour tests of pentoses, hexoses
8. General carbohydrate unknown, identification of
urinary sugars, paper chromatography
9. Determination of Glucose in blood plasma
10. Determination of acid value and iodine number of a fat
11. Determination of saponification value of fat
12. Determination of blood cholesterol
13. **Revision**
14. **FINAL LABORATORY EXAMINATION**

Assessments:

First Mid Term Examination:	15
Second Mid Term Examination:	15
Quizzes:	5
Laboratory Reports:	5
Final Practical Examination:	20
Final Theoretical Examination:	40

References:

1. David L. Nelson and Michael M. Cox, **Lehninger Principles of Biochemistry**, W. H. Freeman; 4th edition (April 23, 2004).
2. Pamela C. Champe and Richard A. Harvey, **Lippincott's illustrated reviews: Biochemistry**, Lippincott Williams & Wilkins; 2 Sub edition, 1994.

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