University of Baghdad

College of Nursing

Undergraduate

Curriculum

Biochemistry

1. **Course Title: Biochemistry**
2. **Course Number**: 102
3. **Credit Hours**: Total of (4) credits :

   Theory (3) credits.

   Clinical (1) credits.
4. **Course Calendar**: Total (14) hours weekly of (15) weeks :

   Theory: (3) hrs.

   Clinical: (2) hrs .
5. **Placement: First years / First Semester**
6. **Course Description**:

   This course is designed to introduce students to the fundamental concepts compounds of biochemistry. The students look at both structure and role of abnormal carbohydrates, lipids, amino acids, proteins, and enzymes with diseases. They also acquire the basic skill necessary for general laboratory analysis and operating maintaining, and cleaning laboratory equipment.

Course Objective:

After successfully completion of the course, the students will be able to:

1. Understand the clinical distinguish between carbohydrate, proteins, and lipids.
2. Understand the role of hormones and the metabolic reactions in the body.
3. Realize some important body constituents and their chemical changes in the body.
4. Differentiate the biochemical functions of different human organs in normal and abnormal condition.

5. Understand the human biochemical reactions in normal status and in case of diseases.
6. Use laboratory methods for monitoring biochemical reactions in biological samples.
7. Handle the laboratory equipment properly.

7. **Course Outline:**

Theoretical Content

Part I: Chemistry of Carbohydrates:

1.1. Definition of Carbohydrates.
1.2. Classification of Carbohydrates.
1.3. Biomedical Importance of Carbohydrates.
1.4. Sugar Derivatives of Biologic Importance
1.5. Monosaccharides.
1.6. Disaccharides.
1.7. Polysaccharides
1.8. Digestion of Carbohydrates.
1.9. Absorption of Carbohydrates.
1.10. Carbohydrate Maldigestion Disease.
1.11. Metabolisim of Carbohydrates.
1.12. Krebs cycle

Part II: Chemistry of Lipids:

2.1. Functions and importance of lipids.
2.2. Classification of lipids.
2.3. Identification Characterization of fats in Compound lipids.
2.4. Bile acid and Bile salts

2.5. Methods used for separation of lipoproteins

2.6. Metabolism of lipids

2.7. Pathway of Lipolysis and Lipogenesis

2.8. B - Oxidation of fatty

2.9. Energetics (ATP produce)

2.10. Ketone bodies

2.11. Abnormalities in blood lipid level

Part III: Chemistry of Proteins:

3.1. Functions of proteins.

3.2. Amino acids.

3.3. Classification.

3.4. Functions of amino acids.

3.5. Digestion and Absorption of Proteins.

3.6. Dynamic Equilibrium.

3.7. Metabolism of amino acids.

3.8. Blood Proteins.

3.9. Disturbance in protein metabolism.

3.10. Non protein nitrogen compound.

3.11. Kidney functions (Urea, Creatinine, Uric acid, Ammonia).

Part IV: Chemistry of Enzymes:

4.1. General properties of enzymes.

4.2. General properties of enzymes.

4.3. Chemical composition of enzymes.

4.4. Classification of Enzymes Co- enzymes.

4.5. Enzymes specificity.

4.6. Enzymes activity.

4.7. Serum Enzymes

Part V: Bilirubin:

5.1. Types of bilirubin.

5.2. Jaundice

5.3. Classification of jaundice

5.4. Causes of jaundice

5.6. Neonatal jaundice

Part VI: Urine and Calculi:

6.1. Normal characteristic of urine

6.2. Constituents of normal urine

6.3. Urine Collection

6.4. General urine examination

6.5. Calculi

Clinical Content

Part I: Lab equipment and spectrophotometry.

Part II: Blood drawing and separation.

Part III: Estimation of Glucose in the blood.

Part IV: Estimation of cholesterol in the blood.

Part V: Estimation of triglyceride in the blood.

Part VI: Estimation of HDL in the blood.

Part VIII: Estimation of total protein in the blood.

Part IX: Estimation of urea in the blood.

Part X: Estimation of creatinine in the blood.

Part XI: Estimation of uric acid in the blood.

Part XII: Estimation of GPT &GOT.

Part XIII: Estimation of bilirubin in the blood.

Part XIV: General urine examination.