



# Course Book

<b>Course Description</b>	This course will focus on all the biological changes during the life at health and disease. However, studding the practical part of the clinical biochemistry is focusing on the methods of determination of different components of the blood sugar, urine and other body fluids for instance determination of blood sugar for diabetes mellitus diagnosis.
<b>Course objectives</b>	On completion of this course the student will be able to: how can treat with laboratory devices, chemical compounds, principle of uses, and methods of analysis. Especially learning methods of determination for biological components of blood, urine and other body fluids in the human body and identification the diseases that occurred with changing blood and urine components.
<b>Student's obligation</b>	The students should have attendance and complete all tests, exams and assignments
<b>Required Learning Materials</b>	Lecture halls with data show equipment for lecture presentations, white board, overhead projector, posters.
<b>Assessment scheme</b>	16% Mid Term (Theory and practical) 4% Quiz 40% Assignment (report, paper, homework, seminar) 25% final practical 15% final theory

<b>Specific learning outcome:</b>	<p><b>On successful completion of this program, graduates will be able to:</b></p> <p>1-Learn how to classification, and digestion of big micro molecule</p> <p>2-Learn about the diseases caused by vitamins and minerals</p> <p>3-Knowledge and understanding of the the importance of practical tests</p>
<b>Course References:</b>	<p>1- Mosby's, Manual of Diagnostic and Laboratory Tests.</p> <p>2- Varley, s, Practical clinical biochemistry</p>

<b>Course topics (Theory)</b>	<b>Week</b>	<b>Learning Outcome</b>
<b>Introduction to biochemistry</b>	1	Definition
<b>Carbohydrates</b>	2	Classification, Functions, and Metabolism
<b>Lipids</b>	3	Classification, Functions, and Metabolism
<b>Proteins</b>	4	Classification, Functions, and Metabolism
<b>Nucleic acids</b>	5	Components, Types, and Function
<b>Blood</b>	6	Coagulation process, and Collection
<b>Enzymes</b>	7	Properties, Classification
<b>Carbon compounds</b>	8	Classification, alkanes, alkenes, alkynes
<b>Solutions</b>	9	Properties and classification
<b>Acids, bases, salts</b>	10	Properties, pH scale in health and disease.

<b>Vitamins</b>	<b>11</b>	Classification, Function, and sources
<b>Minerals</b>	<b>12</b>	Classification, Function, and sources
<b>Practical Topics</b>	<b>Week</b>	<b>Learning Outcome</b>
<b>Laboratory Safety and Glassware</b>	<b>1</b>	Glassware's that use in chemistry laboratory
<b>Equipment used in the laboratory</b>	<b>2</b>	Equipment's that use in chemistry laboratory
<b>Spectrophotometry</b>	<b>3</b>	Beer-Lambert Law
<b>Blood sugar test</b>	<b>4</b>	Types of blood glucose tests
<b>Cholesterol test</b>	<b>5</b>	Definition, Purpose, and calculation
<b>Triglyceride test</b>	<b>6</b>	Definition, Purpose, and calculation
<b>HDL test</b>	<b>7</b>	Definition, Purpose, and calculation
<b>Blood urea test</b>	<b>8</b>	Definition, Purpose, and calculation
<b>Bilirubin blood test</b>	<b>9</b>	Definition, Purpose, and calculation
<b>Determination of serum creatine</b>	<b>10</b>	Definition, Purpose, <b>Preparation</b> , and calculation
<b>Total protein test</b>	<b>11</b>	Definition, Purpose, and calculation
<b>General urine examination</b>	<b>12</b>	Tests for abnormal components in the urine

**Questions Example Design**

**Theoretical Part:**

**Q1/ Match the list A to list B**

No	Answer	List A		List B
1-		Breaking of bonds	A	Functions of lipids

2-		Main sources of energy in body is a	B	Cellulose
3-		Maintenance of acid, base, water and electrolyte balance	C	Hydrolases

**Q2/ What are the differences between the following?**

1-Saturated fatty acid & unsaturated fatty acid

2-DNA & RNA:

**Q3/ What are the Physiological functions of them:**

1. Calcium:
2. Vitamin E (Tocopherol):

**Practical Part:**

**Written test**

**Q1/Answer of the following:**

1-What is the purpose of total protein test?

2-Why is blood sugar sometimes higher after exercise than it was before?

**Q2/ Complete the sentences by the correct word:**

- 1- Beaker is using for.....
- 2- Beer law it is combine the relationship between.....

**Q3/**You have out patient has a clinical analysis for sugar and cholesterol knowing that test reading is (0.40) and standard reading is (0.50)for sugar and (0.60) for cholesterol, distinguish the result of two items? And mention the result is normal or abnormal?

**Laboratory practice**

1-Write the volume of this pipette:

2-Read the absorbance of this solution:

**Extra notes:**

**External Evaluator**

I confirmed that the contents of this syllabus are commonly more explicit and follows the principles and rules in Biochemistry subjects.

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