

## Course syllabus of Biochemistry 2

Faculty: Medicine and Health Sciences  
Department: Health Sciences  
Program: Bachelor in Medical Laboratory

### I. General information about the course instructor :

Name	Dr. Abdulhabib Alqubaty	Office Hours (3 Hours Weekly )					
Location & phone number	4114	Sat	Sun	Mon	Tue	Wed	Thu
Email	alqubaty71@gmail.com	2	-	1	1	-	1

### II. General information about the course :

1.	Course Title:	Biochemistry 2				
2.	Course Code and Number:	BML245				
3.	Credit Hours :	Lecture	Seminar/Tutorial	Practical	Training	Total
		2	-	1	-	3
4.	Study Level and Semester:	2nd year / 2nd semester				
5.	Pre-requisites:	BML235				
6.	Co-requisites:	None				
7.	Program in which the course is offered	Bachelor in Medical Laboratory				
8.	Teaching Language:	English				
9.	Instruction location:	University of Science and Technology, Sana'a ,Yemen				

### III. Course Description

This course provides students with basic knowledge about metabolic pathways and their key steps in carbohydrates, lipids, protein and nucleic acids. It also help student understand generation and storage of metabolic energy. This course also help them to perform some independent lab work and learn to cooperate with their colleagues in a laboratory environment. In the laboratory sessions, students are expected to learn how to use the centrifuge and spectrophotometer. Protein concentration, glucose and cholesterol level in the plasma will be determined using spectrophotometer. The course is based on lectures as well as seminars, group discussion, collaborative learning, self-study, lab experiments, log book and group works . The students will be evaluated through written exam, practical exam, and problems, lab report, practical exam and evaluation of log book. Biochemistry 1 course is a prerequisite course.

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إدارة ضمان الجودة والاعتماد  
APPROVED

عميد الكلية:  
د. عبد الله المخلافي

رئيس القسم:  
د. عبد الحبيب القباطي

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المراجع:  
أ.د. علي الطراج  
د. حمود الحبابي

الموصف:  
د. عبد الحبيب القباطي

#### IV. Course Aims: This course is aimed to:

1. Enable the student to illustrate and/or describe the metabolic pathways of macronutrients and nucleotides.
2. Provide the students with knowledge about the hereditary and acquired metabolic disturbances and their biochemical laboratory and clinical outcomes.
3. Learn the student how to point out the bioenergetics of the concerned metabolic pathways under different physiological circumstances and their integrator regulations with other working metabolic pathways.
4. Enable the student to perform some biochemical test to estimate serum levels of glucose, total proteins, albumin, cholesterol, and uric acid by colorimetric methods
5. Make the student able to interpret medical laboratory results.

#### V. Course Intended Learning Outcomes (CILOs) :

1. Define the metabolic pathways of carbohydrates, lipids, proteins, nucleotides and their micro-molecules and determine the site of each and illustrate the steps and regulatory mechanisms of the metabolic pathways.
2. List the steps and regulatory mechanisms of the metabolic pathways.
3. Calculate the bioenergetics of the concerned metabolic pathways under different physiological circumstances.
4. Point out the clinical significance of determination of plasma levels of glucose, total proteins, albumin, cholesterol and uric acid and some enzymes.
5. Estimate serum levels of glucose, total proteins, albumin, cholesterol and uric acid by colorimetric methods.
6. Use instruments and devices in biochemistry laboratory efficiently.
7. The student will be able to work effectively in a group in lab or during preparation of seminars



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المراجع :  
أ.د. علي الحاج  
د. حمود الحبابي

الموافق :  
د. عبد الحبيب القباطي

VI. Course Contents				
Theoretical Aspect:				
No.	Course Units	Sub-topics	Week due	Contact Hours
1	Metabolism of carbohydrate	1. Glycolysis 2. Gluconeogenesis 3. Krebs cycle 4. Glycogenesis 5. Glycogenolysis 6. Metabolism of Galactose and fructose 7. Pentose phosphate pathway	1 <sup>st</sup> – 5 <sup>th</sup>	10
2	Metabolism of Lipids	1. Biosynthesis of fatty acids 2. Biosynthesis of triacylglycerols 3. Lipolysis 4. Oxidation of fatty acids 5. Ketone bodies formation and oxidation 6. Biosynthesis of cholesterol	6 <sup>th</sup> – 8 <sup>th</sup>	6
3	Midterm exam		9 <sup>th</sup>	2
4	Metabolism of amino acid	1. Transamination reaction 2. Urea cycle 3. Glucose- alanine cycle 4. Biosynthesis of non-essential amino acids 5. Catabolism of carbon skeleton of amino acids 6. Disorders in amino acid metabolism	10 <sup>th</sup> – 12 <sup>th</sup>	6
5	Nucleic acid metabolism	1. Biosynthesis of purine nucleotides 2. Biosynthesis of pyrimidines nucleotides 3. Catabolism of Purina and pyrimidines	13 <sup>th</sup> – 15 <sup>th</sup>	6
6	Final Exam		16 <sup>th</sup>	2
Total number of weeks and hours			16	32

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 د. حمود الحبابي

الموصف :  
 د. عبدالحبيب الفياطي

**Second: Practical/Tutorial/Clinical Aspects :****Write up practical/tutorial/clinical topics**

No.	Practical/Tutorial/Clinical topics	Week due	Contact Hours
1	Collection of Blood Sample	2 <sup>nd</sup>	2
2	Instruments in biochemistry lab& lab safety	3 <sup>rd</sup>	2
3	Estimation of blood glucose	4 <sup>th</sup>	2
4	Estimation of cholesterol	5 <sup>th</sup>	2
5	Estimation of triglyceride	6 <sup>th</sup>	2
6	Estimation of total protein	7 <sup>th</sup>	2
7	Estimation of total albumin	8 <sup>th</sup>	2
8	Estimation of uric acid	9 <sup>th</sup>	2
9	Final Practical Exam	10 <sup>th</sup>	2
<b>Total number of weeks and hours</b>		<b>9</b>	<b>18</b>

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مستند  
المراجع  
أ.د. علي الحاج  
د. حمود الحبابي  
13/11

الموصف :  
د. عبد الحبيب القواطي