

## Course Specification

### Biochemistry II

#### 1. General Information:

Course Title	Biochemistry II
Code No.	BI723
Department	Biochemistry
Teaching hours	150hrs
Language	English
Academic Year	Second Year
Course Coordinator	Dr. Aisha Balkhar Mohamed
Date and Signature	September 2020

#### 1.1 . Number of hours per week:

Lectures: 4hrs.      Laboratory: 2hrs.      Training: 1hr.      Total: 7hrs.

#### 2. Objectives of Course:

- To give the students insight into appreciating how understanding of metabolic processes occurring in the human body, could contribute to the understanding and explanation of pathological phenomena.
- To make students familiar with the various control and integrating mechanisms of diverse biochemical events in different metabolic processes, and to understand normal and abnormal human metabolism.
- Providing students with knowledge of basic chemical constituents of biological fluids in health and disease, with the ability to determine the relevant investigations for their applications in clinical diagnosis.
- To enable the student to point out the bioenergetics of the concerned metabolic pathways under different physiological circumstances.
- To give students experience in biochemical methodology in order to be aware with the clinical biochemistry techniques as diagnostic tools and to be able to interpret the results for appropriate diagnosis.
- To enable the student to identify the free radicals and their participation in the etiology of chronic disorders. The student will be gain knowledge about antioxidant family and its role in prevention and treatments of chronic disease and cancer
- To enable the student to illustrate and/or describe the role of selected mineral in the metabolism.
- To enable the student to understand basics of genetic and molecular techniques like PCR, FISH, Western blotts. Newly, we provide the uses of real time PCR in COVID19.

### 3. Intending Learning Outcomes (ILOs):

#### a. Knowledge and Understanding:

On successful completion of the course, student will be able to:

a.1	Define the metabolic pathways of carbohydrates, lipids, proteins, nucleotides and their micro-molecules and determine the site of each.
a.2	Point out the related metabolic disorders and their clinical prints on biochemical and molecular basis.
a.3	Understand the differing mechanism which the body uses to get rid various types of foreign chemical as drugs , food , additive , and pollutants.
a.4	Understanding the role of antioxidants in prevention and treatment of chronic diseases.
a.5	Describe the basic of human genetic and molecular techniques used in field of genetic

#### b. Intellectual skills:

On successful completion of the course, student will be able to:

b.1	Interpret symptoms, signs and biochemical laboratory findings of some metabolic disorders
b.2	Diagnose the type of abnormality of pathological glucose tolerance curve.
b.3	Point-out the etiology of metabolic disturbance in a given case study report.

#### c. Practical and Professional Skills:

On successful completion of the course, student will be able to:

c.1	Estimate serum levels of glucose, total proteins, albumin, cholesterol, creatinine and uric acid by colorimetric methods.
c.2	Perform chemical tests to detect abnormal constituents of urine.
c.3	Assess glucose tolerance by glucose tolerance test.

#### d. General and Transferable skills:

On successful completion of the course, student will be able to:

d.1	Work effectively in a group in lab or during preparation of seminars.
d.2	Apply problem solving method in case discussion
d.3	Work in team and show respect to colleagues and staff
d.4	Communicate orally and by writing

#### 4. Course Contents:

Academic Subject	Total Hours (150)	Lectures	Laboratory	Tutorials
Introduction to Metabolism	8	4	2	2
Bioenergetics and Biological Oxidation	10	6	2	2
Carbohydrates Metabolism and Clinical Correlation	24	18	4	2
Lipid metabolism and Clinical Correlations	26	18	4	4
Amino acid Metabolism and Clinical Correlations	26	18	4	4
Nucleotide Metabolism and Clinical Correlation	11	8	2	1
Porphyryn Metabolism	13	8	4	1
Xenobiotic Metabolism	7	4	2	1
Principles of Nutrition	7	4	2	1
Molecular Biology & Genetic Engineering	18	12	4	2

#### 5. Teaching and Learning Methods :

- Lectures
- Practical Sessions
- Tutorials
- Student Group Presentation

#### 6. Evaluation Methods

Evaluation Method	Date	Marks 150	%	ILOs Assessed
1 Annual Work		30	20%	
Mid-year Exam	January	25		Knowledge, understanding and intellectual skills
▪ Student Presentation		5		Knowledge, understanding and intellectual skills
2 Final Exam	June	120	80%	
▪ Written		75		Knowledge, understanding and intellectual skills
▪ Practical		30		knowledge, understanding and intellectual skills Practical and professional skills General and transferable skills
▪ Oral		15		Knowledge, understanding and intellectual skills Professional, general and transferable skills

### 7. Evaluation Schedule:

Evaluation		Date
1	<b>Mid-Year exam:</b> Written exam includes different types of questions MCQs, True & False, short essay questions, matching and complete the blanks	January
2	<b>Final written exam:</b> consists of different types of questions MCQs, True & False, short essay questions, matching and complete the blanks	June
3	<b>Practical exam:</b> Perform tests related to subjects, spot diagnosis	
4	<b>Oral exam:</b> mainly conducted by external visitors	
5	<b>Student Presentation</b>	Before mid-year exam

### 8. References:

Reference Title	Publisher	Edition	Author	Place
<b>Course books</b>	Sirte University	==	Addison Sadafian	Library
<b>Essential Books</b>	Lippincott William & Wilkins	3 <sup>rd</sup> 2005	Champe PC, Harvey RA, Ferrier DR,	==
<b>Recommended Books</b>	Wiley -Lewis	5 <sup>th</sup> 2002	Devlin TM Ed	==
	McGraw-Hill companies	26 <sup>th</sup> 2003	Murray RK, Granner DK, Mayes PA, Rodwell VW	==
<b>Web Sites</b>	<a href="http://www.kumc.edu/biochemistry/resource.html">http://www.kumc.edu/biochemistry/resource.html</a> <a href="http://www.medlib.iupui.edu/ref/biochem.htm">http://www.medlib.iupui.edu/ref/biochem.htm</a> <a href="http://www.Sciencedaily.com">http://www.Sciencedaily.com</a>			

### 9. Required Facilities:

Required Facilities	Comments
Lecture Theatre	Provided by the Faculty ( 1 theater and 1 large hall).
Small group classes	In the Department (60 students).
Laboratory	are available at the department
Video zoom camera	Used in distance learning
Social media group	Facebook and telegram

Course Coordinator: Dr.Aisha Balkhar Mohamed  
 Programme Coordinator: Dr. Hussain Amaigil  
 Head of Department: Dr. Aisha Balkhar Mohamed

Signature:.....  
 Signature:.....  
 Signature:.....

Date: September 2020

Course ILOs Mapping Matrix – Biochemistry II

Topic	Knowledge and Understanding a					Intellectual Skills b			Practical and Professional Skills c			General and Transferable Skills d			
	1	2	3	4	5	1	2	3	1	2	3	1	2	3	4
Introduction to Metabolism	x					x	x	x	x			x	x	x	x
Bioenergetics and Biological Oxidation	x			x	x			x	x		x	x	x	x	x
Carbohydrates Metabolism and Clinical Correlation	x	x				x	x		x		x	x	x	x	x
Lipid metabolism and Clinical Correlations	x	x				x	x		x			x	x	x	x
Amino acid Metabolism and Clinical Correlations	x	x				x		x	x	x		x	x	x	x
Nucleotide Metabolism and Clinical Correlation	x	x				x		x	x	x		x	x	x	x
Porphyrin Metabolism	x	x				x		x	x	x		x	x	x	x
Xenobiotic Metabolism			x			x		x	x			x	x	x	x
Principles of Nutrition	x					x		x	x			x	x	x	x
Molecular biology & Genetic Engineering					x	x		x	x			x	x	x	x