



Course specification
2020- 2021
Faculty of Pharmacy
Mansoura University



Third level

Course specification: Biochemistry-II
Pharmaceutical sciences program
Credit hour system

University: Mansoura
Faculty : Pharmacy
Department : Biochemistry
Course title: Biochemistry-II

Program on which the course is given	Pharmaceutical sciences, credit hour system
Academic Level	Third Level, semester one
Date of course specification approval	9/12/2020

1- Basic Information : Course data :

Course title:	Biochemistry II	Code:	PB-312
Specialization:	Medical		
Prerequisite:	Biochemistry- I		
Teaching Hours:	Lecture: 2	Practical:	1
Number of units: (credit hours)	3		

2- Course Aims:

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

1. Understand the major metabolic pathways that take place in human body.
2. Learn the interrelationship between carbohydrates, lipid and protein metabolism.
3. Practice skills that are of value to future employment in some areas of biology.

Intended learning outcomes (ILOs):

a- Knowledge and understanding

a1	Introduction of basic principles of biochemistry.
a2	Study different classes of biologically active macromolecules that form the human body.
a3	Understanding the clinical uses of enzymes.
a4	Understanding the role of vitamins in metabolism.



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a5	Understanding the damaging effect of the reactive oxygen species (ROS).
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b- Intellectual skills

b1	Development of the biochemical basis for the components of the human body.
b2	Compare chemical components of the human body in healthy and diseased persons.

c- Professional and practical skills

c1	Handling laboratory glassware and machines used in clinical determination of different components of the human body.
c2	Identification of many constituents in the human body.
c3	Measuring biochemical parameters in different body fluids like urine, blood, serum and plasma.
c4	Learning lab techniques.
c5	Learning lab techniques.

d- General and transferable skills

d1	Dealing with biochemical methods to chemical components of the human body.
d2	Communication and working with others in solving problems.



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3- Contents:-

Week No	Topics	No.of hours	Lecture credit hours	Practical credit hours
1	Carbohydrates: introduction to metabolism, digestion and absorption of carbohydrates. Glycolysis and Regulation of glycolysis.	2	2	-
2	Kreb's cycle and Glycogen metabolism.	2	2	-
3	HMP shunt and Uronic acid pathway, Monosaccharides interconversion and gluconeogenesis.	2	2	-
4	Respiratory chain, biological oxidation	2	2	-
5	Digestion and absorption of lipids Neutral fat metabolism and B-oxidation.	2	2	-
6	Fatty acid synthesis, ketogenesis and ketolysis. Phospholipids and Cholesterol and Sphingomyelins metabolism.	2	2	-
7	Midterm exam	-	-	-
8	Nucleic acid metabolism	2	2	-
9	Protein digestion and absorption, general reactions of amino acids and urea cycle.	2	2	-
10	Individual amino acids metabolism-1	2	2	-
11	Individual amino acids metabolism-2	2	2	-
12	Final written and oral			
Week No	Topics	No.of hours	Lecture credit hours	Practical credit hours
1	Chemical analysis for biological fluids; Urine analysis / Urine report	2	-	1
2	Chemical analysis for biological fluids; Urine analysis / Urine report	2	-	1
3	Urine Report	2	-	1
4	Urine Report	2	-	1



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5	Infection Control Principles/ Coloremetric assay of serum Glucose/assay of glucose in urine/case study	2	-	1
6	Infection Control Principles/ Coloremetric assay of serum Glucose/assay of glucose in urine/case study	2	-	1
7	Midterm exam	-	-	-
8	Coloremetric assay of Liver function test/ Coloremetric assay of Renal function test (creatinine, urea and uric acid levels)	2	-	1
9	Coloremetric assay Liver function test/ Coloremetric assay Renal function test (creatinine, urea and uric acid levels)	2	-	1
10	Coloremetric assay Cholesterol blood level /Revision	2	-	1
11	Coloremetric assay Cholesterol blood level /Revision	2	-	1
12	Practical Exam	2	-	1

4- Teaching and learning Methods:

4.1	Lectures using Data show & PowerPoint presentation or whiteboard
4.2	Practical sessions using Laboratory equipment
4.3	Self-learning
4.4	Recorded videos on my Mans
4.5	Discussion online sessions

5- Student Assessment:

a- Assessment methods:

1- Written exam	To assess understanding, intellectual, professional
2- Practical exam	To assess professional and practical skills
3- Oral	To assess Knowledge, understanding, intellectual, general skills and confidence
4- Quizes	To assess knowledge, understanding and intellectual skills
5- Case study	To assess the skills of problem-solving and data presentation

b- Assessment schedule

Assessment 1	quiz	3 rd week
Assessment 2	midterm	7 th week
Assessment 3	practical	13 th week



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Assessment 4	oral	15 th week
Assessment 5	written	15 th week

c- Weighting of assessments

	%
Mid-term examination	10
Final-term examination	50
Oral examination	15
Practical Examination and semester work	25
Total	100%

6 - List of References

No.	Reference	Type
1.	Lippincott's Illustrated Reviews: Biochemistry. Pamela C. Champe, Richard A. Harvey, Denise R. Ferrier; 7 th edition-2017	Reference textbook
2.	Harper's Biochemistry. Robert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell 31 st edition-2018	Reference textbook
3.	A Manual of Laboratory and Diagnostic Tests 10th. Frances Talaska Fischbach; Margaret Fischbach; 10th edition-2017	Reference textbook

7- Matrix of knowledge and skills of the course

No	Course contents	Study Week	ILOS			
			Knowledge & understanding	Intellectual skills	Professional and practical skills	General & transferable skills
1.	Carbohydrates: introduction to metabolism, digestion and absorption of carbohydrates. Glycolysis and Regulation of glycolysis.	1	a1, a2	b2	c2	d1
2.	Kreb's cycle and Glycogen metabolism.	2	a1, a3	b2	c5	d1,d2
3.	HMP shunt and Uronic acid pathway, Monosaccharides interconversion and gluconeogenesis.	3	a1, a5	b2	c3	d1,d2
4.	Respiratory chain, biological oxidation	4	a1, a4	b2	c4, c5	d1
5.	Digestion and absorption of lipids Neutral fat metabolism and B-oxidation.	5	a1, a4	b2	c1, c2	d1,d2



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6.	Fatty acid synthesis, ketogenesis and ketolysis. Phospholipids and Cholesterol and Sphingomyelins metabolism.	6	a1, a2	b2	c1, c2	d1
7.	Midterm exam	7	a1	-	c3, c5	-
8.	Nucleic acid metabolism	8	a1, a3	b2	c2, c5	d1,d2
9	Protein digestion and absorption, general reactions of amino acids and urea cycle.	9	a1, a5	b2	c1, c5	d1
10	Individual amino acids metabolism-1	10	a1, a4	b2	c4, c5	d1
11	Individual amino acids metabolism-2	11	a1	b1,b2	c1, c2	d1,d2
12	Final written and oral	12	a1, a4	b2	c4, c5	d1
16	Chemical analysis for biological fluids; Urine analysis / Urine report	1	a1, a2,a3	b1	c1	d1,d2
17	Chemical analysis for biological fluids; Urine analysis / Urine report	2	a1, a3	b1	c1	d1
18	Urine Report	3	a1, a3	b1	c1	d1
19	Urine Report	4	a1, a2	b1	-	d2
20	Infection Control Principles/ Colometric assay of serum Glucose/assay of glucose in urine/case study	5	a1, a2	b1,b2	c1	d1
21	Infection Control Principles/ Colometric assay of serum Glucose/assay of glucose in urine/case study	6	a1, a2, a5	b1,b2	c1	d1,d2
22	Midterm exam	7	-	-	-	-
23	Colometric assay of Liver function test/ Colometric assay of Renal function test (creatinine, urea and uric acid levels)	8	a1, a4	b1,b2	c1	d1,d2
24	Colometric assay Liver function test/ Colometric assay Renal function test (creatinine, urea and uric acid levels)	9	a1	b1,b2	c1	d1,d2



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25	Coloremetric assay Cholesterol blood level /Revision	10	a1	b1, b2	c1	d2
26	Coloremetric assay Cholesterol blood level /Revision	11	a1, a3	b1, b2	-	d2
27	Practical Exam	12	a1	b1,b2, b3	c1	d1

Course Coordinator	Prof. Dr. Laila A Eissa
Acting Head of department	Assoc. Prof. Dr. Mohammed El-Messery