

Course Syllabus

1	Course title	Biochemistry II	
2	Course number	1203253	
3	Credit hours	3(theory)	
	Contact hours (theory, practical)	3(theory)	
4	Prerequisites/corequisites	Biochemistry I (1203251)	
5	Program title	Pharmacy & Pharm D	
6	Program code	NA	
7	Awarding institution	The University of Jordan	
8	School	Pharmacy	
9	Department	Biopharmaceutics & Clinical Pharmacy	
10	Course level	Undergraduate (2 nd year)	
11	Year of study and semester (s)	Fall and Spring semester of the 2nd year	
12	Other department (s) involved in teaching the course	NA	
13	Main teaching language	English	
14	Delivery method	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online	
15	Online platforms(s)	<input type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....	
16	Issuing/Revision Date	1.10.2023	

17 Course Coordinator:

Name: **Dr. Shereen Aleidi**

Contact hours: To be announced

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Phone number: 23374

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18 Other instructors:

Name: Prof. Nancy Hakooz

Office number: 213

Phone number:

Email: nhakooz@ju.edu.jo

Contact hours: to be announced

19 Course Description:

This course covers the basic concepts of metabolic pathways of the major biomolecules, including carbohydrates, lipids, glycosaminoglycan, and proteins. These pathways such as glycolysis, gluconeogenesis, monophosphate pathway, dietary lipids metabolism, fatty acid β -oxidation, fatty acid synthesis, and urea cycle. It discusses vitamins and their biological function. In addition, it covers the integration of metabolism in case of starvation and well-fed state. Also, integration of the metabolic changes in the case of diabetes mellitus

20 Course aims and outcomes:

A- Aims:

1. To use the knowledge gained in Biochemistry I to understand the basic concepts of metabolism
2. To Identify the structure of carbohydrates, function, and metabolism
3. To Identify the structure of Proteins, function, and metabolism
4. To Identify the structure of Lipids, function, and metabolism
5. To identify the structure and biological function of glycosaminoglycan
6. To provide students with the ability to differentiate between the different biochemical pathways (synthesis and degradation)
7. To provide students with the ability to interpret patient biochemical starvation and well-fed state



B- Students Learning Outcomes (SLOs):

Upon successful completion of this course, students will be able to:

Descriptors	CLO No.	<div> SLOs of the program (PLOs) </div> <div> SLOs of the course (CLOs) </div>	Learner	Problem-Solver	Professional
Knowledge	K1	1. Describe the structure of major biomolecules including carbohydrates, proteins, lipids			
	K2	2. Identify the structure and biological function of glycosaminoglycan, proteoglycan and glycolipids			
	K3	3. Describe the metabolic pathways involved in carbohydrate, lipids, and protein degradation and synthesis			
	K4	4. Recognise the differences between synthesis and degradation pathways			
	K5	5. Identify the structure and function of fat-soluble vitamins and water-soluble vitamins			
	K6	6. Perform complex data-handling exercises associated with biochemical pathways.			
Skills	S1	7. Recognise basics of metabolism integrations and the role of insulin and			

		glucagon in maintaining the metabolism			
Competencies	C1	8. Demonstrate integrity by not cheating and not committing plagiarism and respect to professors and classmates by observing active listening inside the classroom.			

21. Topic Outline and Schedule:

Week	Lecture	Topic	Students Learning outcomes	Teaching Methods	Evaluation Methods**	References
1	1.1	Biochemistry of Carbohydrates.	1,2	Face to face lecturing		1. Lippincott Illustrated Reviews: Biochemistry , 7th edition, by Denise Ferrier, 2017, ISBN/ISSN 9781496344 496 2. Lehninger Principles of Biochemistry , Seventh Edition, by David L. Nelson (Author), Michael M. Cox (Author), 2017, ISBN-13: 978-1464126116
	1.2					
2	2.1	Glycoproteins and Glycosaminoglycans.	1,2			
	2.2	Glycolysis.	1,3			
3	3.1	Gluconeogenesis.	1,3			
	3.2	Hexose Monophosphate pathway	1,3			
4	4.1	Citric acid cycle.	1,3		Quiz/ assignment/ Exam	
	4.2	Glycogen metabolism.	1,3,4			
5	5.1	Glycogen metabolism.	1,3,4		Quiz/ assignment/ Exam	
	5.2	Metabolism of monosaccharides and disaccharides	1,3			
6	6.1	Bioenergetics and oxidative Phosphorylation	1,3,4		Quiz/ assignment/ Exam	
	6.2	Biochemistry of Lipids.	1			
7	7.1	Metabolism of dietary lipids.	1,3		Quiz/ assignment/ Exam	
	7.2	Fatty acid and triacylglycerol metabolism	1,3		Quiz/ assignment/ Exam	

8	8.1	Water soluble vitamins.	5				
	8.2	Phospholipid metabolism	1,3,4				
9	9.1	Cholesterol and steroid metabolism	1,3,4	Face to face lecturing		Quiz/ assignment/ Exam	
	9.2	Biological Membranes.	1				
10	10.1	Nitrogen metabolism.	1	Face to face lecturing		Quiz/ assignment/ Exam	
	10.2	Disposal of Nitrogen.	1,3,4				
11	11.1					Quiz/ assignment/ Exam	
	11.2	Metabolism of carbon skeleton.	1,3,4				
12	12.1	Conversion of amino acids to specialized products	1,3,4			Online Quiz/ Final Exam	
	12.2						
13	13.1	Metabolic effects of insulin and glucagon.	6,7			Online Quiz/ Final Exam	
	13.2						
14	14.1	Metabolism in the well-fed state.	6,7			Online Quiz/ Final Exam	
	14.2						

15	15.1	Metabolism in starvation and diabetes mellitus	6,7		Online Quiz/ Final Exam	
	15.2					

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Quizzes	15	To be announced	1,2,3,4	To be announced	Face to face
Midterm	30	To be announced	1,2,3,4,8	To be announced	Face to face
Assignment	5	To be assigned	6	To be announced	Teams
Final	50	All	1-8	To be announced	Face to face



23 Course Requirements

(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform...etc):

Students should have:

- Computer
- Internet connection
- Active university account on Moodle (e-learning) website

Active university account on Microsoft Teams

24 Course Policies:

A. Attendance policies:

As per the applicable university regulations

B. Absences from exams and submitting assignments on time:

As per the applicable university regulations

C. Health and safety procedures:

N/A

D. Honesty policy regarding cheating, plagiarism, misbehavior:

As per the applicable university regulations

E. Grading policy:

As per the applicable school bylaw

F. Available university services that support achievement in the course:

Moodle (e-learning) website-LMSsystem (exams)

Microsoft Teams institutional subscription

25 References:



A- Required book(s), assigned reading and audio-visuals:

1. **Lippincott Illustrated Reviews: Biochemistry**, 7th edition, by Denise Ferrier, 2017, ISBN/ISSN9781496344496
2. **Lehninger Principles of Biochemistry** ,Seventh Edition, by David L. Nelson (Author), Michael M. Cox (Author), 2017, ISBN-13: 978-1464126116

B- Recommended books, materials, and media:

- 1- Course Notes:
Lecture and Practical Notes. By staff members
- 2- Facilities Required for Teaching and Learning
 - ☐ Audio-visual aids.
 - ☐ Intelligent screen

26 Additional information:

Course Material and Announcements: Students need to use the e-learning page at the JU website in order to get all lecture handouts and guidelines which will be uploaded there.

In addition, course-related announcements and exam results will be posted on the e-learning page and it is the responsibility of each student to check the site regularly.

Name of Course Coordinator: Dr.Shereen Aleidi -Signature: ----- Date: -10.10.2023
Head of Curriculum Committee/Department: ----- Signature: ----- ---
Head of Department: ----- Signature: ----- -
Head of Curriculum Committee/Faculty: ----- Signature: ----- -
Dean: ----- Signature: -----