

Course E-Syllabus

1	Course title	Metabolism
2	Course number	0354721
3	Credit hours	3
	Contact hours (theory, practical)	3
4	Prerequisites/corequisites	M.Sc.
5	Program title	Master of Biological Sciences
6	Program code	0354
7	Awarding institution	University of Jordan
8	School	Faculty of Sciences
9	Department	Biological Sciences
10	Level of course	Graduate
11	Year of study and semester (s)	First semesters 2023-2024
12	Final Qualification	Master in Biological Sciences
13	Other department (s) involved in teaching the course	None
14	Language of Instruction	English
15	Teaching methodology	<input type="checkbox"/> Blended <input type="checkbox"/> Online
16	Electronic platform(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input checked="" type="checkbox"/> Others... Facebook & YouTube
17	Date of production/revision	Oct. 2, 2024

18 Course Coordinator:

Name: Dr. Tareq Alhindi
Office number: 305
Phone number:
Email: t.alhindi@ju.edu.jo

19 Other instructors:

20 Course Description:

As stated in the approved study plan.

The course is aimed at students in the master program in biological sciences. The course begins with an introduction to metabolism including metabolic pathways, reaction mechanisms, experimental approaches to the study of metabolism and thermodynamics of phosphate compound and life. Metabolic pathways of the major biological compounds which includes carbohydrates, lipids, amino acids and nucleotides with emphasis on reaction mechanisms and enzyme catalysis will be discussed in detail focusing on energy metabolism and integration. The course will include consideration of recent literature on metabolism to be presented by course participants.

21 Course aims and outcomes:

A- Aims:

Aims: The course aims to train students in advanced metabolic processes as an introduction to scientific thinking and analysis of scientific results. Towards this aim, metabolic pathways will be described in a critical manner in an attempt to integrate the various pathways in a uniform manner. Special attention will be focused on reading, analyzing and presenting literature in the area of metabolic processes and pathways. A major aim of the course is to teach students how to relate the knowledge they gain from the lectures to recent experimental results in this field of advanced science.

B- Intended Learning Outcomes (ILOs):

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

- 01-** Function of metabolism in biological system (catabolism and anabolism)
- 02-** Essential chemical interactions in metabolism
- 03-** Energy transformation and conservation (transduction) and utilization (coupling)
- 04-** Carbohydrate metabolism
- 05-** Lipid metabolism
- 06-** Nitrogen metabolism
- 07-** The role of oxygen and vitamins in metabolism
- 08-** Current research topics in metabolism
- 09-** Writing scientific reports
- 10-** Knowing the role of vitamins and good nutrition in good health

SLOs SLOs of the course	SLO (1)	SLO (2)	SLO (3)	SLO (4)
1	x			
2	x			
3	x			
4	x			
5	x			
6	x			
7	x			
8	x			
9	x			
10	x			

22. Topic Outline and Schedule:

Week	Lecture	Topic	Teaching Methods*/platform	Evaluation Methods**	References
1	1.1	Introduction			
	1.2	Background essentials			
2	2.1	Background essentials		Homework	

	2.2	Background essentials			
3	3.1	Metabolism :anabolism and catabolism			
	3.2	Carbohydrates			
4	4.1	Carbohydrates		Homework	
	4.2	Glycolysis			
5	5.1	Glycolysis			
	5.2	Anaerobic Metabolism of Pyruvate		Homework	
6	6.1	Control of Glycolysis			
	6.2	Pentose Phosphate Pathway			
7	7.1	Storage Mechanisms			
	7.2	Gluconeogenesis			
8	8.1	Mid. Term exam		Exam	
	8.2	Oral presentation		Oral Exam	
9	9.1	Oral presentation		Oral Exam	
	9.2	Oral presentation		Oral Exam	
10	10.1	Oral presentation		Oral Exam	
	10.2	Oral presentation		Oral Exam	
11	11.1	Oral presentation		Oral Exam	
	11.2	Scientific writing			
12	12.1	Guest Presentation			
	12.2	Scientific writing		Reports	
13	13.1	Lipid Metabolism		Reports	
	13.2	The Metabolism of Nitrogen		Reports	
14	14.1	Journal Club		Reports	
	14.2	Guest Presentation			
15	15.1	Term paper		Reports	
	15.2	Term paper		Reports	

- Teaching methods include: Synchronous lecturing/meeting; Asynchronous lecturing/meeting
- Evaluation methods include: Homework, Quiz, Exam, pre-lab quiz...etc

23 Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	Period (Week)	Platform
Midterm Exam	30		TBA	Written
Oral Presentation	15		Weekly	Oral
Term Paper	15		Weekly	Written

Final Exam	40		TBA	Written

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

A PC or new smartphone with MS Teams installed and an adequate internet connection; a suitable internet browser to open the Moodle webpage E-learning and JU Exams if needed.

25 Course Policies:

A- Attendance policies:

Enrolled students are expected to attend the lectures in line with the university of Jordan policy as outlined in the JU student handbook. Failure to do so will make the student subject to the penalties outlined in the said document. Furthermore, missing classes will have negative repercussions on the student's participation grade.

B- Absences from exams and submitting assignments on time:

You should talk to your instructor as soon as possible if you miss an exam. All such cases will be dealt with according to the UJ student handbook rules.

C- Health and safety procedures:

To be announced during laboratory introduction as explained in the laboratory manual.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

All violations pertaining to cheating, plagiarism and misbehavior will be dealt with in accordance to the rules outlined in the UJ student handbook. In order to avoid plagiarism, the sources for the information contained in your homework must be properly cited and verbatim quotations must be limited and explicitly presented as such. To learn more about the procedures for ethical referencing of information and how to assess the credibility of information critically you can consult with the relevant documents in the course UJ e-learning page (see below).

E- Grading policy:

Evaluation	Points %	Date
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Midterm Exam	30%	TBA
Oral Presentation	15%	Weekly
Term Paper	15%	Weekly
Final Exam	40%	TBA

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

Moodle course page at University of Jordan e-learning portal: <https://elearning.ju.edu.jo/>

26 References:

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

“Lehninger Principles of Biochemistry, 8th Edition” by David L. Nelson. © 2021.
ISBN-13 : 978-1319228002

B- Recommended books, materials and media:

“The Vital Question” by Nick Lane. © 2016.
ISBN-13 : 978-0393352979

Recommended videos announced during the course available on YouTube or other platforms.

27 Additional information:

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Name of Course Coordinator: ---- Dr. Tareq Alhindi ----- Signature: ----- Date: -----

Head of Curriculum Committee/Department: ----- Signature: -----

Head of Department: ----- Signature: -----

Head of Curriculum Committee/Faculty: ----- Signature: -----

Dean: ----- Signature: -----