Course Syllabus

1	**Course title**	Clinical Biochemistry 1
2	**Course number**	1203411
3	**Credit hours**	2 (theory)
	Contact hours (theory, practical)	2 (theory)
4	**Prerequisites/corequisites**	Prerequisite: Pathophysiology for pharmacy (1203301) + Biochemistry II (1203253)
5	**Program title**	PharmD
6	**Program code**	
7	**Awarding institution**	The University of Jordan
8	**School**	Pharmacy
9	**Department**	Biopharmaceutics and Clinical Pharmacy
10	**Course Level**	Undergraduate
11	**Year of study and semester (s)**	The first semester of the 3rd year
12	**Other department (s) involved in teaching the course**	N/A
13	**Main teaching language**	English
14	**Delivery method**	Face to face (Synchronous lecturing)
15	**Online platforms(s)**	☒Moodle ☒Microsoft Teams ☐Skype ☐Zoom ☐Others……
16	**Issuing/Revision Date**	07/10/2023

17 Course Coordinator:

Name: Nancy Hakooz	Contact hours: To be announced
Office number: 213	Phone number: 23351
Email: nhakooz@ju.edu.jo	

18 Other instructors:

Name: Office number: Phone number: Email: Contact hours:

19 Course Description:

This two-hour credit course provides an overview of the key aspects of clinical biochemistry-the science behind many of the diagnostic tests used in medicine. This course provides the student with an introduction to the principles of the biochemical analysis of clinical samples and an understanding of how biochemical investigations can be employed in the diagnosis, management, and prevention of disease. Case studies are used extensively to highlight and explain the biochemical disorders underlying clinical diseases.

20 Course aims and outcomes:

A- Aims:

1. To identify the pathophysiological basis of major human diseases and their effect on body fluid composition
2. To increase students' knowledge about symptoms and diagnostic tests and correlate with associated diseases.
3. To provide students with the ability to differentiate between the different biochemical diseases.
4. To increase students' knowledge about vital organs and their diseases.
5. To provide students with the ability to interpret patient biochemical laboratory results.

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B- Students Learning Outcomes (SLOs):

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

Discriptors	CLO No.	SLOs of the program (PLOs) / SLOs of the course (CLOs)	Learner	Problem-Solver	Professional
Knowledge	**K1**	Outline how biochemical analysis can be employed to differentiate between normal and diseased conditions.			
	K2	Integrate knowledge from basic physiology to identify the function, structure, laboratory investigation, and diseases of the different body systems.			
Skills	**S1**	Collect subjective and objective evidence related to the patient (including laboratory data and physical assessment).			
	S2	Implement a step-by-step approach to interpreting laboratory data in diagnosis.			
	S3	Perform complex data handling exercises associated with biochemical analysis.			
Competencies	**C1**	Demonstrate integrity by not cheating and not committing plagiarism and respect to professors and classmates by observing active listening inside the classroom.			

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21. Topic Outline and Schedule:

Week	Lecture	Topic	Student Learning Outcome (CLOs)	Learning Methods (Face to Face/Blended / Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	1.1	Topic 1: Introduction to Clinical Biochemistry	K1	Face to Face			Exam	Textbook, handouts
	1.2						Exam	Textbook, handouts
2	2.1	Topic 2: Specimen collection.	K1	Face to Face			Exam	Textbook, handouts
	2.2	Sampling errors	K1	Face to Face			Exam	Textbook, handouts
3	3.1	Reference range determination	K1	Face to Face			Exam	Textbook, handouts
	3.2	Topic 3 Amino acids and proteins: Amino acids, aminoaciduria	K1, K2	Face to Face			Exam/ Quiz	Textbook, handouts
4	4.1	Plasma enzymes	K1, K2	Face to Face			Exam/Quiz	Textbook, handouts
	4.2	Plasma proteins as clinical markers	S1, S2, S3	Face to Face			Exam/ Quiz	Textbook, handouts

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Week	Lecture	Topic	Student Learning Outcome (CLOs)	Learning Methods (Face to Face/Blended / Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
5	5.1	Total plasma protein test, albumin, acute phase reactants, nonacute phase reactants. Immunoglobulins	K1, K2	Face to Face			Exam	Textbook, handouts
	5.2		S1, S2, S3	Face to Face			Exam	Textbook, handouts
6	6.1	Topic 4 Liver function tests: Liver diseases	K1, K2	Face to Face			Exam	Textbook, handouts
	6.2	Liver function tests: bilirubin and liver enzymes	S1, S2, S3	Face to Face			Exam	Textbook, handouts
7	7.1	Topic 5 Water and electrolytes: Water hemostasis	K1, K2	Face to Face			Exam	Textbook, handouts
	7.2		K1, K2	Face to Face			Exam	Textbook, handouts
8	8.1	Sodium, hypo- and hypernatremia	S1, S2, S3	Face to Face			Exam	Textbook, handouts
	8.2	Sodium, hypo- and hypernatremaia	S1, S2, S3	Face to Face			Exam	Textbook, handouts
9	9.1	Potassium, hypo- and hyperkalemia	S1, S2, S3	Face to Face			Exam	Textbook, handouts

Week	Lecture	Topic	Student Learning Outcome (CLOs)	Learning Methods (Face to Face/Blended / Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
	9.2	Acid-base disturbances: buffers, metabolic and respiratory acidosis, and alkalosis	K1, K2	Face to Face			Exam	Textbook, handouts
10	10.1		K1, K2	Face to Face			Exam	Textbook, handouts
	10.2		S1, S2, S3	Face to Face			Exam	Textbook, handouts
11	11.1	Topic 6 Calcium metabolism: Regulation of calcium	K1, K2	Face to Face			Exam/ assignment	Textbook, handouts
	11.2	Hypo- and hypercalcemia	S1, S2, S3	Face to Face			Exam/ assignment	Textbook, handouts
12	12.1	Phosphate regulation	K1, K2	Face to Face			Exam/ assignment	Textbook, handouts
	12.2	Magnesium regulation	K1, K2	Face to Face			Exam/ assignment	Textbook, handouts

Week	Lecture	Topic	Student Learning Outcome (CLOs)	Learning Methods (Face to Face/Blended / Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
13	13.1	Topic 7 Renal function tests: Kidney function tests	K1, K2	Face to Face			Exam/ assignment	Textbook, handouts
	13.2	Renal diseases	S1, S2, S3	Face to Face			Exam/ assignment	Textbook, handouts
14	14.1	Acute and chronic renal failure	K1, K2	Face to Face			Exam/ assignment	Textbook, handouts
	14.2	Renal calculi	S1, S2, S3 and C1	Face to Face			Exam/ assignment	Textbook, handouts

22 Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	CLOs	Period (Week)	Platform
Midterm Exam	30	Topics 1-3	K1, K2, C1	8th week	On campus
Quiz	15	Topic 5	K1, K2, S1, S2, S3, C1	5th week	On campus
Assignment	5	All topics	K1, S1, S2, C1	12th week	On campus
Final Exam	50	All Topics	K1, K2, S1, S2, S3, C1	15th week	On campus

23 Course Requirements

Students should have:

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

A Course Policies:

A- Attendance policies: As per the applicable university regulations

B- Absences from exams and handing in assignments on time: As per the applicable university regulations

C- Health and safety procedures: N/A

D- Honesty policy regarding cheating, plagiarism, and misbehavior: As per the applicable university regulations

E- Grading policy:

- Midterm exam (30%)
- Coursework (20%)
- Final exam (50%)

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

- Moodle (e-learning) Website
- Microsoft Teams institutional subscription

25 References:

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

- An Illustrated Colour Text in Clinical Biochemistry 3rd edition, Gaw A et al. (ISBN 978-0443072697)

B- Recommended books, materials, and media:

- Tietz Fundamental of Clinical Chemistry. 5th edition, edited by Burtis C.A. and Ashwood E.R., 2001. (ISBN 9780721601892)
- Clinical Chemistry. 5th edition, Marshall W.J., 2004. (ISBN 978-0723434559)
- Textbook of Biochemistry with Clinical Correlations. T.M. Devlin Editor, Wiley-Liss, John Wiley & Sons, Inc. 7th Edition 2010 (ISBN 978-0-470-60152-5)

26 Additional information:

Name of Course Coordinator: -------Nancy Hakooz ----Signature: ---------- Date: 7-10-2023
Head of Curriculum Committee/Department: ---------- Signature: ----------
Head of Department: ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ----------
Dean: ---------- Signature: ----------