

COURSE DESCRIPTIONS

Faculty	Faculty of Allied Medical Sciences				
Department	Medical Laboratory Sciences			NQF level	7
Course Title	Clinical Biochemistry and nutrition Practical	Code	MLSC312	Prerequisite	MLSC244
Credit Hours	1	Theory	0	Practical	1
Course Leader		email			
Lecturers	Prof. Dr. Osama Althunibat	emails	O.Althunibat@jadara.edu.jo		
Lecture time	Sat. 5.00-8.00 pm.	Classroom	D 115	Attendance	Fulltime
Semester	1 st Sem. 2024-2025	Production	2020	Updated	Oct. 2024
Type of Teaching	<input checked="" type="checkbox"/> Face-to-Face <input type="checkbox"/> Blended <input type="checkbox"/> Online				

Short Description

This course discusses the fundamentals and principles of clinical and analytical biochemistry assays, methods and parameters, which are related to patient's care and disease/disorders diagnosis. It covers the skills of venipuncture and blood processes; familiarizes the students with different equipment (such as spectrophotometer and auto pipettes) and analytes measurements (such as electrolytes, proteins and enzymes) in plasma & serum.

Course Objectives

By the end of this course, the student will be able to:

- Provide basic information regarding lab safety & phlebotomy.
- Understand how to use centrifuges, water baths, & spectrophotometry.
- Deal with different body fluids especially serum & plasma.
- Read and interpret kit sheets of different analytes.
- Explain qualitative & quantitative methods.
- Prepare solutions & perform pipetting correctly.
- Handle blood or blood-product samples safely.

Learning Outcomes	
A. Knowledge - Theoretical Understanding	
<ul style="list-style-type: none"> • a1. Recognize how to measure different biomolecules (plasma proteins, enzymes, urea, creatinine, bilirubin, glucose, and cholesterol) in human plasma or serum. • a2. Explain and interpret the results from previous experiments. 	
B. Knowledge - Practical Application	
<ul style="list-style-type: none"> • a3. Apply technical laboratory procedures for the enumeration and examination of biochemical molecules and interpret laboratory findings and their correlation to diagnostic aspects of certain disorders. 	
C. Skills - Generic Problem Solving and Analytical Skills	
<ul style="list-style-type: none"> • b1. Select the knowledge from this course to perform experiments in scientific research. 	
D. Skills - Communication, ICT, and Numeracy	
<ul style="list-style-type: none"> • b2. Develop practical and communication skills through experimentation work. 	
E. Competence: Autonomy, Responsibility, and Context	
<ul style="list-style-type: none"> • c1. Explain wide range of diagnostic biochemical tests and assays in medical laboratories and develop practical skills, through the knowledge gained from this course. 	
Teaching and Learning Methods	
<ul style="list-style-type: none"> • Lectures with discussion and demonstration. • Lectures will be administrated using power-point presentations and will be provided to the students through JU e-learning website. • Brainstorming • Reports, practical performance • Lab manual is obligatory and required by the students <p>Teaching duration: According to the academic calendar provided at JU website.</p>	
Assessment Methods	
<ul style="list-style-type: none"> • Midterm Exam (25%) • Reports, Attendance, & Evaluation (15%) • Quizzes (10%) • Final Exam (50%) 	

Course Contents					
Week	Hours	CLOs	Topics	Teaching & Learning Methods	Assessment Methods
1.	1	a3, b1, b2	<ul style="list-style-type: none"> Clinical Chemistry Introduction (Review of micro pipetting and Spectrophotometry) 	Handout	Midterm Exam
2.	1	a3, b1, b2	<ul style="list-style-type: none"> Phlebotomy and Preparation of Serum and Plasma samples 	Handout	Midterm Exam & Quiz
3.	1	a1, a2, a3, b1, b2, c1	<ul style="list-style-type: none"> Total protein and albumin determination 	Handout	Midterm Exam
4.	1	a1, a2, a3, b1, b2, c1	<ul style="list-style-type: none"> Determination of sodium, calcium, and magnesium in plasma 	Handout	Midterm Exam
5.	1	a1, a2, a3, b1, b2, c1	<ul style="list-style-type: none"> Enzymatic activity (ALP, CK) 	Handout	Midterm Exam & Quiz
6.	1		<ul style="list-style-type: none"> Midterm Exam 	Handout	
7.	1	a1, a2, a3, b1, b2, c1	<ul style="list-style-type: none"> Determination of Urea 	Handout	Final Exam
8.	1	a1, a2, a3, b1, b2, c1	<ul style="list-style-type: none"> Determination of Uric Acid 	Handout	Final Exam & Quiz
9.	1	a1, a2, a3, b1, b2, c1	<ul style="list-style-type: none"> Creatinine determination 	Handout	Final Exam
10.	1	a1, a2, a3, b1, b2, c1	<ul style="list-style-type: none"> Cystinuria 	Handout	Final Exam
11.	1	a1, a2, a3, b1, b2, c1	<ul style="list-style-type: none"> Determination of serum glucose (FBS, RBS) 	Handout	Final Exam & Quiz
12.	1	a1, a2, a3, b1, b2, c1	<ul style="list-style-type: none"> Determination of lipid profile (Cholesterol, Triglycerides) in plasma 	Handout	Final Exam
13.	1		<ul style="list-style-type: none"> Final Exam 	Handout	

Infrastructure	
Textbook	<ul style="list-style-type: none"> • Clinical Biochemistry Lab Manual. • Handouts • Kit Sheets
References	<ul style="list-style-type: none"> • Lecture handouts • NCBI Database (https://www.ncbi.nlm.nih.gov/): includes many textbooks that are available online FREE. • Internet: there are many websites that provide valuable data related to Clinical Biochemistry practical part including research paper, books, animation, videos, etc. you can find more of these websites by searching in the internet using a suitable searching key. Many websites will be posted on E-learning during the semester.
Required reading	Lab manual is obligatory and required by the students
Electronic materials	Provided to the students through JU e-learning website.
Other	

Course Assessment Plan						
Assessment Method		Grade	CLOs			
First (Midterm)		25%	See course contents above			
Second (if applicable)						
Final Exam		50%	See course contents above			
Coursework						
Coursework assessment methods	Assignments					
	Case study					
	Discussion and interaction					
	Group work activities	5%				
	Lab tests and assignments	10%				
	Presentations					
	Quizzes	10%	See course contents above			
Total		100%				

Plagiarism

Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).

Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.