Course Description Form

Course Name:
Clinical Chemistry
Course Code:
PhcIs25-512
Semester / Year:
First semester/2025-2026
Description Preparation Date:
1.9.2025
Available Attendance Forms:
Theoretical Lectures/Practical Laboratory
Number of Credit Hours (Total) / Number of Units (Total)
(2+3)total 75/4
Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Mohammed Khalid Al-Nori,Email: alnorik@uomosul.edu.iq Assistant Prof. Muther Nazar, Email: muthear78@uomosul.edu.iq Dr. Manal A. Ibrahim, Email: alfarhamanal@uomosul.edu.iq Dr.Hiba Hatim, Email: hiba.radwan@uomosul.edu.iq Dr. Suhair Mouaed, rasheedph@uomosul.edu.iq Dr. Inas Hazim. Email: enashazem@uomsul.edu.iq
Course Objectives

1-Understanding of human body chemistry in both healthy and diseased states, enabling to diagnose, monitor, and manage disease through laboratory data analysis 2-Interpreting the results of biochemistry analyses that augment the clinical examination to achieve definite diagnosis of the disease 3-Evaluating data accuracy, and applying this knowledge to therapeutic decision-making and patient care	**1-** Interpreting the results of biochemistry analyses that augment the clinical examination to achieve definite diagnosis of the disease **2-** Learning Technical skills in clinical laboratories : Collection and handling of different specimens

Teaching and Learning Strategies

Strategy Lecturing Seminars Homework Quiz	

Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	2 theory	**1A.** The student identifies the most important disorders related to	Disorders of Carbohydrates metabolism, Hyperglycemia &	Theoretical lectures	Paper-based exams

		carbohydrate metabolism **2B.** The student analyzes the disorders of carbohydrate metabolism	Diabetes mellitus, Hypoglycemia		
1	3practical	**2A.** The student explains the types of sampling that are required for biochemical investigations	Preparation of patient, Handling of sample	laboratory work	Paper-based exams
2	2 theory	**1C.** The student appreciates the disorders of lipid metabolism and its biochemistry	Disorders of lipid metabolism	Theoretical lectures	Paper-based exams
2	3 practical	**3A.** The student identifies the concentrations of glucose, especially diabetes mellitus	Determination of serum glucose	laboratory work	Paper-based exams Performance assessment
3	2 theory	**3B.** The student analyzes the biochemical changes in renal disorders	Kidney Function Tests	Theoretical lectures	Paper-based exams
3	3 practical	**B4**. Understanding the physiological basis of OGTT **A4**. know the indications and clinical significance	oral glucose tolerance test	laboratory work	Paper-based exams
4	2 theory	**5A.** The student distinguishes the most important changes in biochemistry during liver diseases	liver Function Tests	Theoretical lectures	Paper-based exams
4	3 practical	**A6**-know the clinical indications for the test **C2**-perform the assay correctly	Serum urea determination	laboratory work	Paper-based exams Performance assessment
5	2 theory	**A7**-Understanding the clinical	Diagnostic enzymology	Theoretical lectures	Paper-based exams

		significance of enzymes **D1**-Interpret enzyme test result in clinical conditions **C3**-Apply diagnostic enzymology in patient evaluation			
5	3 practical	**B5**-Understanding the physiological and biochemical basis of creatinine **C4**-perform the test accurately using laboratory technique	Creatinine determination	laboratory work	Paper-based exams Performance assessment
6	2 theory	**A8**-Explain hormone synthesis secretion and regulation **C5**-Appreciate the physiological action of each hormone	Hypothalamus & pituitary endocrinology, adrenal glands	Theoretical lectures	Paper-based exams
6	3 practical	**B6**-Recognize the clinical importance of measuring triglycerides **C6**-Perform the laboratory procedure accurately	Serum triglyceride	laboratory work	Paper-based exams Performance assessment
7	2 theory	**D2**-Interpret laboratory results and clinical signs **C7**-Apply knowledge to clinical problem – solving	Hypothalamus & pituitary endocrinology, adrenal glands	Theoretical lectures	Paper-based exams
7	3 practical	**B7**-Recognize the clinical significance of cholesterol testing **B8**-Understand the analytical principles of cholesterol and HDL assays	Total cholesterol HDL-c determination	laboratory work	Paper-based exams Performance assessment

		C8-Perform the procedures accurately			
8		Mid term exam			
9	2 theory	**A9**-Identify hormonal regulation and feedback mechanisms **B9**-Recognized reproductive disorders in males and females	Reproductive system, disorders of gonadal function in males & females.	Theoretical lectures	Paper-based exams
9	3 practical	**B10**-Recognize the clinical importance of AST **C9**-Perform the laboratory procedure accurately	AST estimation	Laboratory work	Paper-based exams
10	2 theory	**D3**-Interpret laboratory finding **F1**-Develop critical thinking and reasoning	Reproductive system, disorders of gonadal function in males & females.	Theoretical lectures	Paper-based exams
10	3practical	**B11**-Recognize the clinical importance of ALT **C10**-Perform the laboratory procedures accurately	ALT estimation	Laboratory work	Paper-based exams
11	2 theory	**A10**-Identify common thyroid disorders and their lab patterns **C11**.Apply critical thinking and reasoning	Thyroid function tests	Theoretical lectures	Paper-based exams
11	3 practical	**B12**-Recognize the clinical significance of ALP measurement **C12**-Perform the laboratory procedure accurately **D4**-Interpret ALP results clinically	ALP estimation	laboratory work	Paper-based exams

12	2 theory	**B13**-Understand the clinical significance **A11**-Learn strategies to minimize or account for interference	Drug interaction with laboratory Tests	Theoretical lectures	Paper-based exams
12	3 practical	**B14**-Recognize the clinical significance of estimation **A12**-Learning the analytical principles of ACP assay **D5**-Interpret ACP results clinically	Estimation of acid phosphatase	laboratory work	Paper-based exams Performance assessment
13	2 theory	**A13**-Learn the causes and pathophysiology of hypercalcemia and hypocalcemia **B15**-Understand the role of calcium in disease	Disorders of calcium metabolism	Theoretical lectures	Paper-based exams
13	3 practical	**A14**-Learn the analytical principles of bilirubin assays **C13**-Perform the laboratory procedure accurately	Bilirubin estimation	laboratory work	Paper-based exams
14	2 theory	**B16**-Recognize the clinical significance of tumour markers **A15**-Identify common tumour markers and their associated cancer **D5**-Interpret tumour marker results clinically	Tumor markers	Theoretical lectures	Paper-based exams
14	3 practical	**A15**-Learn the analytical principle of total protein assay **C14**-Perform the laboratory procedure accurately	Total protein	laboratory work	Paper-based exams

		D6-Interpret total protein results clinically			
15	2 theory	**A16**-Learn the basic concept of inborn errors of metabolism **C15**-Appreciate the clinical significance and management	Inborn errors of metabolism	Theoretical lectures	Paper-based exams
15	3 practical	**B17**-Recognize the clinical significance of albumin measurement and understand the analytical principles of albumin assays **C16**-Perform the laboratory procedures accurately	Plasma albumin	laboratory work	Paper-based exams Performance assessment

Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc	
Learning and Teaching Resources	
Required textbooks (curricular books, if any)	
Main references (sources)	-Clinical Biochemistry and Metabolic Medicine . Eighth edition. Martin-crook -Tietz Clinical chemistry and Molecular Diagnostics 6th edition; 2018 -Kaplan, Clinical Chemistry, 5th edition
Recommended books and references (scientific journals, reports...)	
Electronic References, Websites	Different scientific websites