Republic of Yemen

Ministry of Higher Education & Scientific Research

21 September University for Medicals and Applied Sciences

Faculty of Clinical Pharmacy

Program of Clinical Pharmacy & Pharm. D.

Course Specification of Clinical Biochemistry (2)

Course No. (03.01.216)

2022

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Dr. Ebtesam Al- Zabedi	Dr. Ghamdan AL-Tahish	Dr. -----……	Dr. Abdulelah Thabet	Dr. Ali Alyahawi

I. Course Identification and General Information:

1	**Course Title:**	Clinical Biochemistry (2)				
2	**Course Code & Number:**	03.01.216				
3	**Credit hours:**	C.H				TOTAL
		Th.	Seminar	Pr	Tr.	
		2	-	-	-	2
4	**Study level/ semester at which this course is offered:**	4th Level – 2nd Semester				
5	**Pre –requisite (if any):**	Clinical Biochemistry (1)				
6	**Co –requisite (if any):**	None				
7	**Program (s) in which the course is offered:**	Bachelor of Clinical Pharmacy & Pharm. D.				
8	**Language of teaching the course:**	English				
9	**Study System**	Semester based System				
10	**Mode of delivery:**	Full Time				
11	**Location of teaching the course:**	Faculty of Clinical Pharmacy				
12	**Prepared By:**	Dr. Ebtesam Al- Zabedi				
13	**Date of Approval**					

II. Course Description:

This course aims to cover the clinical aspects of diseases and their effect on body chemistry. The course includes Lipid metabolism and lipoproteins disorders, carbohydrate metabolism disorders, cardiac function tests, pancreatic function tests, endocrinology, metabolic aspects of malignant diseases, clinical aspects of pregnancy, and main hematological disorders.

III. Course Intended learning outcomes (CILOs) of the course		Referenced PILOs
A. Knowledge and Understanding: Upon successful completion of the course, students will be able to:		
a.1	Describe diseases of carbohydrate and lipid metabolism.	A1
a.2	Discuss the normal and abnormal biochemical markers in assessment of cardiac function, pancreatic function, and endocrine dysfunction.	A1,A2
B. Intellectual Skills: Upon successful completion of the course, students will be able to:		
b.1	Interpret the changes of laboratory findings preformed in clinical practice.	B2
C. Professional and Practical Skills: Upon successful completion of the course, students will be able to:		
c.1	Apply laboratory findings in clinical practice	C1, C4, C5
D. Transferable Skills: Upon successful completion of the course, students will be able to:		
d.1	Communicate effectively with the medical team concerning the use of laboratory tests in the diagnosis of diseases.	D1
d.2	Develop the skills of information management	D2

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1-Describe diseases of carbohydrate and lipid metabolism.	Lectures Assignments Interactive discussion Office hours Seminars Self-learning	- Exams - Quizzes - Assignment
a2- Discuss the normal and abnormal biochemical markers in assessment of cardiac function, pancreatic function, and endocrine dysfunction.	Lectures Assignments Interactive discussion Office hours Seminars Self-learning	- Exams - Quizzes - Assignment

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1- Interpret the changes of laboratory findings preformed in clinical practice.	Lectures Assignments Interactive discussion Office hours Seminars Self-learning	- Exams - Quizzes - Assignment

(C) Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
C1- Apply laboratory findings in clinical practice	Lectures Assignments Interactive discussion Office hours Seminars Self-learning	- Exams - Quizzes - Assignment

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:

Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1- Communicate effectively with the medical team concerning the use of laboratory tests in the diagnosis of diseases.	- Seminar - Interactive discussion - Self-learning	- Oral Presentation - Class discussion
d2- Develop the skills of information management	- Assignments - Interactive discussion - Seminars - Self-learning	- Exams - Quiz - Assignment

IV. Course Content:

A – Theoretical Aspect:

Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours
1	Lipid metabolism disorders Lipoproteins metabolism, lipid profile and lipid disorder	a 1, a2, b1, c1, d1, d2	- Chylomicron syndrome - Familial lipoprotein lipase deficiency - Familial hypercholesterolaemia - Familial combined hyperlipidaemia - Familial hypertriglyceridaemia - Type III Polygenic hypercholesterolaemia hyperlipoproteinaemia - Defects of apoB metabolism - Rare disorders associated with lipid metabolism - Secondary lipid disorders - Lipid profile (total and HDL-cholesterol and plasma triglycerides (TG)LDL,VLDL - Interpretation of Lipid profile	1	2
2	Disorders of Carbohydrate metabolism. Tests used to diagnose and manage diabetes mellitus	a 1, a2, b1, c1, d1, d2	- Disorders of Galactose Metabolism - Disorders of Fructose Metabolism - Glycogen Storage Diseases - Diabetes mellitus - Different lab. Investigations to all disorders	1	2
3	Tumor markers	a 1, a2, b1, c1, d1, d2	- Tumor markers Types - Diagnose, stage, and/or classify cancer - Estimate prognosis - Select an appropriate treatment (eg, treatment with a targeted therapy)	2	4
4	Blood indices and hematological disorders	a 1, a2, b1, c1, d1, d2	- Blood Indices: PCV,MCV,MCH,MCHC,RDW,PDW, ETC. - Hematological disorders: IDA, megaloblastic anemia, thalassemias,sicle cell anemias.	2	4
5	Cardiac function tests	a 1, a2, b1, c1, d1, d2	- Troponin I and T; Myoglobin; Creatine phosphokinase (CK); Lactic dehydrogenase (LDH); Aspartate aminotransferase (AST).	1	2
	Midterm Exam	a 1, a2, b1, c1		1	2
6	Pancreatic function	a 1, a2,	- Direct (invasive & invasive) indirect	1	2

	tests	b1, c1, d1, d2			
7	Pituitary function tests	a 1, a2, b1, c1, d1, d2	- Anterior pituitary function tests - Posterior pituitary function tests	2	4
8	Adrenal function	a 1, a2, b1, c1, d1, d2	- Adrenaline - Steroids: aldosterone , cortisol	1	2
9	Thyroid function tests	a 1, a2, b1, c1, d1, d2	- T3,T4 and TSH	1	2
10	Biochemical changes during Pregnancy	a 1, a2, b1, c1, d1, d2	- Changes in sodium, water balance and renal function and secondly, alterations in carbohydrate metabolism (changes in insulin resistance and glucose levels.)	2	4
11	**Final Exam**	a 1, a2, b1, c1		1	2
Number of Weeks /and Units Per Semester				**16**	**32**

V. Teaching & Assessments strategies of the course:

- Lectures
- Assignments
- Interactive discussion
- Office hours
- Seminars
- Self-learning
- Exam
- Quiz

VI. Assignments:

No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Assignment 1	a 1, a2, b1, c1, d1, d2	3th	2.5
2	Assignment 2	a 1, a2, b1, c1, d1, d2	6th	2.5
3	Assignment 3	a 1, a2, b1, c1, d1, d2	9th	2.5
4	Assignment 4	a 1, a2, b1, c1, d1, d2	12th	2.5
	Total			10

VII. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Assignments	3th, 6th, 9th and 12th	10	10%	a 1, a2, b1, c1, d1, d2
2	Quiz 1	Week 6	5	5 %	a 1, a2, b1, c1, d1
3	Midterm Exam	Week 8	10	10%	a 1, a2, b1, c1, d1
4	Quiz 2	Week 12	5	5%	a 1, a2, b1, c1, d1
5	Final Exam	Week 16	70	70%	a 1, a2, b1, c1, d1, d2
4	**Total**		100	100%	

VIII. Learning Resources:

- *Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).*

1- Required Textbook(s) (maximum two).

1. Clinical Chemistry. 5th edition, Marshall W.J., 2004. (ISBN 978-0723434559)
2. Textbook of Biochemistry with Clinical Correlations. T.M. Devlin Editor, Wiley-Liss, John W & Sons, Inc. 7th Edition 2010 (ISBN 879 - 0 - 070 - 20106 - 0)

2- Essential References.

1. An Illustrated Colour Text in Clinical Biochemistry 3rd edition, Gaw A et al. (ISBN 04430726970
2. Tietz Fundamental of Clinical Chemistry. 5th edition, edited by Burtis C.A. and Ashwood 2001. (ISBN 9780721601892)
3. Clinical Chemistry in Diagnosis and Treatment. 6th edition, Mayne P.D., 1998 (ISBN 0340576472)

3- Electronic Materials and Web Sites *etc*.

I. Course Policies: (Based on the Uniform Students' Bylaw (2007))

1	**Class Attendance:** Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	**Tardiness:** A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	**Exam Attendance/Punctuality:** No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.

4	**Assignments & Projects:** Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	**Cheating:** Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	**Forgery and Impersonation:** Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply**.**
7	**Other policies:** The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.

Republic of Yemen

Ministry of Higher Education & Scientific Research

21 September University of Medicals & Applied Sciences

Second Part of Course Specification

Faculty of Clinical Pharmacy

Program of Clinical Pharmacy & Pharm. D.

Course Plan (Syllabus) of Clinical Biochemistry (2)

Course No. (**03.01.216**)

2021/2022

Course Plan (Syllabus) of Clinical Biochemistry (2)

Course No. (**03.01.216**))

II. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member		**Office Hours**					
Location& Telephone No.		**SAT**	**SUN**	**MON**	**TUE**	**WED**	**THU**
E-mail							

X. Course Identification and General Information:						
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2	Disorders of Carbohydrate	a 1, a2, b1, c1,	- Disorders of Galactose Metabolism - Disorders of Fructose Metabolism	1	

	metabolism. Tests used to diagnose and manage diabetes mellitus	d1, d2	- Glycogen Storage Diseases - Diabetes mellitus - Different lab. Investigations to all disorders		2
3	Tumor markers	a 1, a2, b1, c1, d1, d2	- Tumor markers Types - Diagnose, stage, and/or classify cancer - Estimate prognosis - Select an appropriate treatment (eg, treatment with a targeted therapy)	2	4
4	Blood indices and hematological disorders	a 1, a2, b1, c1, d1, d2	- Blood Indices: PCV,MCV,MCH,MCHC,RDW,PDW, ETC. - Hematological disorders: IDA, megaloblastic anemia, thalassemias,sicle cell anemias.	2	4
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	Midterm Exam	a 1, a2, b1, c1		1	2
6	Pancreatic function tests	a 1, a2, b1, c1, d1, d2	- Direct (invasive & invasive) indirect	1	2
7	Pituitary function tests	a 1, a2, b1, c1, d1, d2	- Anterior pituitary function tests - Posterior pituitary function tests	2	4
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