



Course Specification

— (Bachelor)

Course Title: Clinical Biochemistry
Course Code: 2054207-3
Program: Bachelor in Biotechnology
Department: Biotechnology Department
College: College of Science
Institution: Taif University
Version: V4
Last Revision Date: 4/1445 – 11/2023



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A. General information about the course:

1. Course Identification

1. Credit hours: (3)					
3 (2 Lecture, 1 Lab)					
2. Course type					
A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department	<input type="checkbox"/> Track	<input type="checkbox"/> Others
B.	<input type="checkbox"/> Required		<input checked="" type="checkbox"/> Elective		
3. Level/year at which this course is offered: (8th level / 4th year)					
4. Course general Description:					
<p>The course introduces the basic knowledge about the application of both biochemistry and analytical chemistry in medical diagnosis. It introduces the principles and procedures of the most common tests performed on Clinical chemistry laboratory. It presents the physiological basis, principle, and procedure for the test as well as clinical significance of the test results, including quality control and normal values. It will use examples from various body fluids including blood, urine, and other body fluids. This will allow coverage of areas such as clinical biochemistry assays and measurements, tissue damage, enzyme release, renal and kidney function tests as well as and reproduction systems.</p>					
5. Pre-requirements for this course (if any):					
Molecular Diagnostics (2053202-3)					
6. Co-requirements for this course (if any):					
N/A					
7. Course Main Objective(s):					
<p>Provide an overview of the role of a clinical biochemistry laboratory in assisting diagnosis and monitoring disease states of patients. and describe the physiological factors that may impact on biochemical assays.</p>					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> ● Traditional classroom 		



No	Mode of Instruction	Contact Hours	Percentage
	● E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	15
3.	Field	
4.	Tutorial	
5.	Others (specify)	
Total		45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Identify the form of biochemical changes associated with diabetes, kidney failure, and liver disease.	K1	Lecture	Written Exams
1.2	Explain the different biochemical disorders in different diseases and the fundamentals of the cellular alterations.	K5	Lecture	Written Exams
2.0	Skills			
2.1	Analyze scientific principles and methodologies in biochemical investigations.	S2	Lecture, Problem solving	Practical Exam
3.0	Values, autonomy, and responsibility			
3.1	Agree with the morals and values of academia.	V1	Discussion	Report



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.2	Cooperate with peers in a teamwork.	V2	Project	Lab Report

C. Course Content

No	List of Topics	Contact Hours
1.	Overview of clinical biochemistry, The role of the Clinical Biochemistry Laboratory. Analytical and physiological factors impacting on test results and interpretation of data.	3
2.	Nutrition, Normal nutrition, and nutritional disorders.	3
3.	Body water and electrolytes disorders	3
4.	<ul style="list-style-type: none"> Carbohydrate metabolism and regulation and hemostasis of blood glucose. Disorders of carbohydrate metabolism. 	3
5.	<ul style="list-style-type: none"> Lipid digestion and metabolism and regulation of blood lipid profile. Lipoprotein metabolism and clinical disorders of lipid metabolism 	3
6.	Investigations of liver function	3
7.	<ul style="list-style-type: none"> Investigations of renal function. Pancreatic function tests. 	3
8.	Endocrine control, dynamic function tests.	3
9.	Biomarkers	3
10.	Heart function tests	3
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam	Week 7	20%
2.	Periodical exam	Week 9	10%
3.	Report	Week 11	10%
4.	Practical Exam	Week 14	20%
5.	Final Exam	Week 15	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources





Essential References	1. Devlin, TM 2015, Biochemistry with clinical correlations, 8th edn, John Wiley and Sons, New York
Supportive References	1. Lehninger's Principles Of Biochemistry 5e 2. Modern Genetic analysis book 2. Gaw, A, Murphy, M J, Cowan, R A, O'Reilly, D St J, Stewart, M J & Shepherd, J 2013, Clinical biochemistry, 5th edn, Churchill Livingstone, Edinburgh. 3. Luxton, R 2008, Clinical biochemistry, 2nd edn, Scion Publishing, Oxfordshire. 4. (ISBN 978 1904842 415.) 5. Marshall WJ and Bangert SK (eds) 2008, Clinical Biochemistry: metabolic and clinical aspects, 2nd edn, Churchill Livingstone Elsevier Ltd. 5- Nelson, DL & Cox, MM 2012, Lehninger principles of biochemistry, 6th edn, WH Freeman, New York.
Electronic Materials	http://medstudent.net/biochemistry.html (biochemistry for medical students).
Other Learning Materials	https://www.wiley.com/college/boyer/0470003790/animations/animations.htm Interactive Biochemistry.

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	One classroom with internet connection for 2 hours a week and one laboratory for 3 hours a week with internet facility.
Technology equipment (projector, smart board, software)	Data show and Smart board as well as Black Board
Other equipment (depending on the nature of the specialty)	Equipment and materials for Laboratory

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Peer Review, Students	Direct (Independent Reviewer), Indirect (survey)
Effectiveness of Students assessment	Faculty members	Direct (Random Correction)
Quality of learning resources	Students	Indirect (survey)
The extent to which CLOs have been achieved	Faculty members	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)





G. Specification Approval

COUNCIL /COMMITTEE	DEPARTMENT COUNCIL
REFERENCE NO.	6
DATE	5/11/2023

