



Course Specifications

Course Title:	Clinical Biochemistry I
Course Code:	(373310-3)
Program:	Bachelor's in Clinical Laboratory Sciences (Level-7)
Department:	Clinical Laboratory Sciences
College:	Applied Medical Sciences
Institution:	Taif University



Table of Contents

A. Course Identification	3
6. Mode of Instruction (mark all that apply)	3
B. Course Objectives and Learning Outcomes	4
1. Course Description	4
2. Course Main Objective	4
3. Course Learning Outcomes	4
C. Course Content	4
D. Teaching and Assessment	5
1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods.....	5
2. Assessment Tasks for Students	6
E. Student Academic Counseling and Support	6
F. Learning Resources and Facilities	7
1. Learning Resources	7
2. Facilities Required	7
G. Course Quality Evaluation	8
H. Specification Approval Data	8

A. Course Identification

1. Credit hours: 3 hours			
2. Course type			
a.	University <input type="text"/>	College <input type="checkbox"/>	Department <input checked="" type="checkbox"/>
b.	Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	Others <input type="checkbox"/>
3. Level/year at which this course is offered:		Level 5 /Third Year	
4. Pre-requisites for this course (if any): Medical Biochemistry (373226-3)			
5. Co-requisites for this course (if any): None			

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	4 hours /week= 60 hours/semester	100%
2	Blended	None	0%
3	E-learning	None	0%
4	Correspondence	None	0%
5	Other	None	0%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	None
4	Others (specify)	None
	Total	60
Other Learning Hours*		
1	Study	51
2	Assignments	10
3	Library	None
4	Projects/Research Essays/Theses	None
5	Homework	10
	Total	71

*The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

This course provides the ground knowledge of clinical biochemistry, laboratory tests and how to interpret its results in different diseases. This course include acid-base disorders and blood gases, plasma proteins, liver and kidney function tests, water and electrolytes disorders, atherosclerosis and cardiac bio-markers.

2. Course Main Objective

After studying this course, the students should be able to recall the enzymes and analytes used in assessment of the function of liver, kidney and heart, interpret laboratory data in relation to diseases of these organs and perform procedures and techniques used in clinical chemistry laboratory.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Recognize the functions of vital organs and their role in metabolism.	K1
1.2	Outline the enzymes and other analytes used in assessment of liver, renal and cardiac diseases; and their reference ranges.	K1
1.3	Describe techniques and procedures for the collection of different types of specimen and the principles of storage, handling, and analysis.	K2
2	Skills:	
2.1	Interpret laboratory data and its correlation with disease process.	S2
3	Competence:	
3.1	Perform work with kits and reagents and act promptly on exposure to any hazards posed by these.	C1
3.2	Demonstrate effective communication of concepts, principles and information effectively by oral and written means with clarity and confidence.	C3
3.3	Operate various laboratory wares and instruments used in clinical chemistry laboratory, efficiently.	C3

C (a) Course Content (Theory)

No	List of Topics	Contact Hours
1	Water and Electrolytes disorders	4
2	Acid-Base disorders and blood gases	4
3	Plasma proteins	2
4	Liver function tests	2
5	Hepatitis and fatty liver	2
..6.	Cholestasis and liver cirrhosis	2
7	Kidney function tests and urinalysis	4
8	Nephrotic syndrome and kidney failure	2
9	Cardiac biomarkers and myocardial infarction	4

10	Lipid profile and atherosclerosis	2
11	Hyperuricaemia and Gout	2
Total		30

(b) Course Content (Practical)

No	List of Topics	Contact Hours
1	Estimation of serum electrolytes	2
2	Estimation of blood gases and determination of blood pH - Use, maintenance of blood gas analyzer - Handling of blood samples for gas analysis	4
3	Estimation of serum albumin and globulin	3
4	Estimation of serum total proteins	2
5	Separation of plasma proteins using electrophoresis	2
6	Liver function tests: - Alanine transaminase - Aspartate transaminase - Lactate dehydrogenase - Alkaline phosphatase	4
7	Liver function tests contd-: - Gamma-glutamyl transferase - Bilirubin: total, direct and indirect	4
8	Kidney function tests: - Estimation of blood urea - Estimation of serum creatinine - Creatinine clearance	4
9	Estimation of cardiac enzymes: - Troponins - Creatine kinase-MB	3
10	Estimation of serum uric acid	2
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Recognize the functions of vital organs and their role in metabolism.	- Lectures	- Exams
1.2	Outline the enzymes and other analytes used in assessment of liver, renal and cardiac diseases; and their reference ranges.	- Lectures	- Exams
1.3	Describe techniques and procedures	- Lectures	- Exams

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	for the collection of different types of specimen and the principles of storage, handling, and analysis.	- Practical sessions	- Lab Reports
2.0	Skills		
2.1	Interpret laboratory data and its correlation with disease process.	- Lectures - Practical sessions - Problem based learning	- Exams - OSPE
3.0	Competence		
3.1	Perform work with kits and reagents and act promptly on exposure to any hazards posed by these.	- Lectures - Practical sessions	- Exams - Lab Reports
3.2	Demonstrate effective communication of concepts, principles and information effectively by oral and written means with clarity and confidence	- Group discussions - Lectures - Practical sessions	- Exams - Assessment of scientific activities
3.3	Operate various laboratory wares and instruments used in clinical chemistry laboratory, efficiently.	- Group discussions - Lectures - Practical sessions	- Exams - Assessment of scientific activities

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-Term Exam	8 th Week	15%
2	Activity	Throughout the semester	5%
3	Practical Report	Throughout the semester	10%
4	Final Practical Exam	16 th Week	20%
5	Final Exam	17 th /18 th Week	50%
6	Total		100%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

- Course instructors are available for individual consultation in their free time. They are usually full-time permanent members present on-campus from 8:00 am to 2:30 pm on all working days. Appointments can be made in person with the instructor through email etc. Days and time availability of each instructor are posted on their doors. Course instructors provide a range of academic and course management advice including course planning and its progression.
- Each student at the department of Clinical Laboratory Sciences has an academic adviser

who is available for individual consultation and guidance. Appointments can be made in person with the instructor through email etc. Days and time availability of each adviser are posted on their doors. The academic adviser can provide support with time management, exam preparation, clarification of subject requirements, feedback on performance and dealing with personal issues as well.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	- Tietz Fundamentals of Clinical Chemistry, 6th edition, Burtis and Ashwood, 2008 Elsevier Publications. - Clinical Chemistry: PRINCIPLES, PROCEDURES AND CORRELATIONS: Bishop, Engelkirk and Fody, 4th Edition, 2000, Lippincott Williams and Wilkins.
Essential References Materials	None
Electronic Materials	Websites, Search engines (Saudi Digital Library, PubMed, Google Scholar)
Other Learning Materials	Journals, Scientific Magazines and Articles.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms and Laboratories
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show, Blackboard and A/V
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	<ul style="list-style-type: none"> - Spectrophotometry - Glassware and automatic pipettes - Biochemical kits

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Student's feedback on effectiveness of teaching and quality of courses.	Students	Indirect: Questionnaire Survey at the end of each semester.
Alignment map of course ILOs with that of program ILOs.	Development and accreditation committee	Direct: Student's Performance
Availability of learning resources, facilities and equipments related to each course.	Students and faculty	Indirect: Questionnaire Survey at the end of each semester.
Evaluation of teaching	Peer evaluators	Direct: Peer evaluation
Standard of student achievement	Examination Committee	Direct: Students grades
Periodical review of course effectiveness and planning for its improvement.	Teaching staff/ Development and accreditation committee	Indirect: Review by Department Committee

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

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

Assessment Methods(Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department Meeting
Reference No.	Meeting No.10
Date	10-9-1440

