



Course Specifications

Course Title:	Medical Biochemistry
Course Code:	373226-3
Program:	Bachelor's in Clinical Laboratory Sciences (Level-7)
Department:	Clinical Laboratory Sciences
College:	Applied Medical Sciences
Institution:	Taif University



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A. Course Identification

1. Credit hours: 3 hours
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: Level 4/Second Year
4. Pre-requisites for this course (if any): Medical Chemistry 2 (370212-4)
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	20
3	Library	None
4	Projects/Research Essays/Theses	None
5	Others(specify)	None
	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 is mainly concerned with understanding metabolic pathways of carbohydrates such as glucose, fructose, galactose and glycogen; lipids such as fatty acids, triglycerides, lipoproteins, cholesterol and steroids; proteins and amino acids, nitrogen metabolism and urea cycle; as well as nucleotide metabolism.

2. Course Main Objective

The main purpose of this course is to make students understand the metabolic pathways of carbohydrates, lipids, proteins and nucleic acids; know the functions, steps and regulatory mechanisms of these pathways.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Describe major metabolic and regulatory events that control the body functions and their clinical relevance on biochemical basis.	K1
1.2	Recognize techniques and procedures used for specimen collection and its handling.	K2
2	Skills:	
2.1	Analyse some metabolic disorders and correlate these with laboratory findings.	S2
3	Competence:	
3.1	Operate various laboratory wares and instruments used in clinical chemistry laboratory, efficiently.	C1
3.2	Demonstrate effective communication of concepts, principles and information effectively by oral and written means with clarity and confidence.	C3

C (a) Course Content (Theory)

No	List of Topics	Contact Hours
1	Introduction to metabolism	2
2	Carbohydrate Metabolism: Carbohydrate digestion and absorption	2
3	Glycolysis, TCA Cycle, Electron Transport Chain	4

4	Pentose Phosphate Pathway Fructose and Galactose Metabolism	2
5	Glycogen Metabolism	2
6	Lipid Metabolism: Lipid Digestion, Absorption, and lipoprotein metabolism	2
7	Fatty Acids Oxidation and Metabolism Triglyceride Metabolism	2
8	Cholesterol Metabolism	2
9	Ketone bodies and Other Lipid Derivatives	2
10	Protein Metabolism: Protein Digestion and Absorption	2
11	Nitrogen Balance and Urea Cycle	4
12	Heme Metabolism	2
13	Nucleotide Metabolism: Nucleic Acid Digestion and Absorption Purine and Pyrimidine Metabolism	2
Total		30

C (b) Course Content (Practical)

No	List of Topics	Contact Hours
1	Hazards in biochemistry lab and disposal of laboratory waste.	2
2	Specimen collection: whole blood, plasma, serum, urine, CSF and other body fluids, preservation of specimen and anticoagulants.	4
3	Commonly used equipments and instruments in biochemistry laboratory	4
4	Spectrophotometric estimation of plasma glucose levels - Fasting levels - Postprandial levels	4
5	Estimation of urinary glucose using strip test	4
6	Lipid profile tests: Estimation of serum total cholesterol	4
7	Estimation of serum HDL-cholesterol	3
8	Estimation of serum LDL – cholesterol	3
9	Estimation of serum triglycerides	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	Describe major metabolic and regulatory events that control the body functions and discuss their clinical relevance on biochemical basis.	- Lectures	- Written exams
1.2	Recognize techniques and procedures used for specimen collection and its handling.	- Lectures - Practical sessions	- Written exams - Lab Reports
2.0	Skills		
2.1	Analyse some metabolic disorders and correlate these with laboratory findings.	- Lectures	- Written exams
3.0	Competence		
3.1	Operate various laboratory wares and instruments used in clinical chemistry laboratory, efficiently.	- Lectures - Practical sessions	- Practical exam (OSPE)
3.2	Demonstrate effective communication of concepts, principles and information effectively by oral and written means with clarity and confidence.	- Group discussion - Lectures	- Scientific activity

2. Assessment Tasks for Students

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

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

E. Student Academic Counseling and Support

F. Learning Resources and Facilities

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.

1. Learning Resources

Required Textbooks	- Ferrier, D.R. (2017). Lippincott's Illustrated Reviews, 7th edition, Wolter Kluwer, Philadelphia.(primary reference) - Devlin, T.M. (2015). Textbook of Biochemistry with Clinical Correlations, 7th edition, John Wiley and Sons.
Essential References Materials	None
Electronic Materials	None
Other Learning Materials	Biochemistry Journals

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

Item	Resources
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Spectrophotometry, Biochemical kits ELISA Electrophoresis

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 Council
Reference No.	Meeting No.10
Date	10-9-1440

