Course Specifications

Course Title:	**Medical Chemistry (1)**
Course Code:	**370112-3**
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

1. Credit hours:
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: **Level 1/First Year**
4. Pre-requisites for this course (if any)**:** **None**
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 hours
Other Learning Hours*		
1	**Study**	45
2	**Assignments**	4
3	**Library**	10
4	**Projects/Research Essays/Theses**	None
5	**Others** (specify)	None
	Total	59 hours

* 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 includes two main parts as detailed below:

1. **Inorganic part** which illustrates atoms, molecules, and different chemical reactions. Types of solutions and their concentrations including molar, molecular weight, and normal solution, chemical equilibrium and different types of buffer solutions will be covered.
2. **Organic part** covers different types of chemical bonds and nomenclature, isomerism reactions of organic compounds such as saturated and unsaturated hydrocarbons, alcohols, thiols, ethers, aldehydes, ketones in addition to carboxylic acids and their derivatives. Moreover, aromatic compounds e.g. nomenclature, aromaticity, benzene, phenol and amines and heterocyclic compounds are covered as well.

2. Course Main Objective

The main objective of this course is to provide students with fundamentals of inorganic and organic chemistry. This includes symbols, molecular atoms, different types of chemical reactions, units of concentrations, chemical bonds, chemical equilibrium and different types of buffer solutions. Students will be able to know general rules for IUPAC/common nomenclature and classification of organic compounds, predict different methods used for preparation and reaction of alkanes, alkenes, alkynes and different types of organic reactions such as addition, elimination and substitution reactions.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge:**	
1.1	Describe atoms, molecules and different types of chemical bonds, chemical reactions, solutions and buffers	K1
1.2	Identify organic compounds, their derivatives, functional groups and isomerism.	K1
1.3	Identify basic principles and instruments used in chemistry laboratory tests.	K2
2	**Skills :**	
None		
3	**Competence:**	
None		

C (a) Course Content (Theory)

No	List of Topics	Contact Hours
	Inorganic part	
1	Atoms, molecules and modern periodic table, orbital and electronic configuration	3
2	Chemical bonds	2
3	Types of chemical reactions	2
4	Solution (molarity, molality, normality) and chemical equilibrium	3
5	Buffer solutions	2
	Organic part	
6	Introduction and hybridization of carbon saturated and unsaturated hydrocarbons	2
7	General rules for IUPAC nomenclature of organic compounds	2
8	Preparation and reaction of alcohols, thiols and ethers	2
9	Preparation and reaction of aldehydes and ketones	2
10	Preparation and reaction of carboxylic acids and their derivatives	2
11	Aromaticity and aromatic compounds	2
12	Cont. aromaticity and aromatic compounds	2
13	Stereochemistry	4
Total		30

(b) Course Content (Practical)

No	List of Topics	Contact Hours
	Inorganic part	
1	Introduction, safety and glassware	2
2	Identification of acidic radicals	2
3	Identification of acidic radicals	2
4	Identification of basic radicals	2
5	Neutralization reactions -standardization of HCl against Na_2CO_3 Titration of HCl against NaOH	4
	Organic part	
6	Identification of alcohols	2
7	Identification of aldehydes and ketones	2
8	Identification of carboxylic acids	2
9	Identification of salts of aromatic acids	2
10	General scheme for identification of inorganic compounds	4
11	General scheme for identification of organic compounds	2
12	General scheme for identification of inorganic and organic compounds	4
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 atoms, molecules and different types of chemical bonds, chemical reactions, solutions and buffers	• Lectures	• Exams
1.2	Identify organic compounds, their derivatives, functional groups and isomerism.	• Lectures	• Exams
1.3	Identify basic principles and instruments used in chemistry laboratory tests.	• Lectures • Practical sessions	• Exams • Lab reports
2.0	**Skills**		
	None		
3.0	**Competence**		
	None		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-Term Exam	8th Week	15%
2	Quiz	12th Week	5%
3	Practical Report	Throughout the semester	10%
4	Final Practical Exam	15th Week	20%
5	Final Exam	16th/17th 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.
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- 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	• William H.; Foote, Christopher S.; Iverson, Brent L.; Anslyn, Eric V. Brown, Organic Chemistry, 4th Edition; 2008. • Kenneth W. Whitten and Kenneth D. Gailey General Chemistry with Qualitative Analysis, 6th edition, 2000.
Essential References Materials	N/A
Electronic Materials	SDL: https://sdl.edu.sa/SDLPortal/en/Publishers.aspx Chemistry Online: http://askthenerd.com/chemistryonline/index.html
Other Learning Materials	N/A

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)	- Laboratory should be stocked with all necessary consumable materials (chemicals, reagents, kits, gloves etc). - All safety materials, tools, and regulations must be available and applied appropriately. - Necessary laboratory equipment should be available such as fridge, spectrophotometry, pipettes, pH meter glassware etc.

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