هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Pharmaceutical Chemistry
Course Code:	ICHM466-2
Program:	Bachelor of Science in Industrial Chemistry
Department:	Department of Physical Sciences
College:	College of Science
Institution:	Jazan University
Version:	TP-153 (2024)
Last Revision Date:	1 March 2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (2hrs)

2. Course type

A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☐Required		☒ Elective		

3. Level/year at which this course is offered: (8th Level /4thyear)

4. Course general Description:

Course title	Course code	Contact Hours			Credit Hours	Year	Level	Prerequisite	Corequisite
		Lec	Tut	Lab					
Pharmaceutical Chemistry	ICHM 466-2	2	0	0	2	4th	8th	CHEM336-2	-

This course covers the basic knowledge about the principles of pharmaceutical chemistry, Study of drug design, development, and analysis, Examination of the relationship between chemical structure and biological activity, Exploration of drug-receptor interactions, nomenclature and Classification, Physicochemical properties, and Solubility of drugs.

5. Pre-requirements for this course (if any)**:**

CHEM336-2

6. Co-requisites for this course (if any)**:**

None

7. Course Main Objective(s):

This course has been designed to provide students with the following concepts:

1. **To describe the role and objectives of Pharmaceutical/Medicinal Chemistry within Pharmaceutical Sciences.**
2. **To know the physicochemical properties of different drug molecules based on knowing the typical functional groups present in drug molecules.**
3. **To describe the different phases of drug discovery and development, know different sources of lead compounds, and understand the prodrug concept for drug development.**
4. **To apply preparation methods of some drugs and their therapeutic use.**
5. **To study the procedures of drug design.**

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	100%

No	Mode of Instruction	Contact Hours	Percentage
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	$2 \times 15 = 30$
2.	**Field**	
3.	**Tutorial**	
4.	**Others (specify)**	
Total		30

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;** *Upon completion of the course, students are able to:*			
1.1	**Demonstrate a broad knowledge and understanding of the different types of drugs, and their targets. (M)**	**K1**	**lecture/ discussion Seminars**	**Objective question**
1.2	**Explain the basic concepts of drugs, including their classification, their chemical composition, and their physicochemical properties. (M)**	**K2**	**lecture / Interactive discussion / Tutorials**	**Essay question**
2.0	**Skills;** *Upon completion of the course, students are able to:*			
2.1	**Demonstrate ability in critical thinking, analyzing the effectiveness and efficiency of drug design and toxicity. (M)**	**S1**	**lecture / interactive discussion / Individual presentation**	**Solving Problems & Essay question**
2.2	**Communicate scientific information and research findings effectively in writing research papers, or orally, using clear and concise scientific language. (M)**	**S5**	**Research /Seminars /Individual presentation/ Oral presentation**	**Interactive Discussions/Rubric**

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	**Values, autonomy, and responsibility;** *Upon completion of the course, students are able to:*			
3.1	**Recognize a chemist's ethical and scientific responsibilities.**	**V2**	**Research project or Oral presentation**	**group work Rubric**

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Pharmaceutical Chemistry.	2
2.	Introduction to Drugs and drug targets.	2
3.	Review of Organic Functional Groups and Acid-Base Concepts	2
4.	Classification of drugs.	2
5	Naming of drugs and medicines.	2
6.	Review of Stereochemistry and Physico-Chemical Properties Related to Drug Action.	3
7.	Drug properties and synthesis.	3
8.	Drug Resistance & Toxicity.	3
9.	DNA and RNA binding drugs.	2
10.	Structure-Activity relationship (SAR) and QSAR	3
11.	Drug discovery, design, and development.	3
12.	Selected topics in medicinal chemistry.	3
	Total	30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	*Periodic Exams*	*6-8*	*20%*
2.	*Assignments & Classroom activities*	*During semester*	*30%*
3.	*Final Exam*	*16-17*	*50%*
	Total		*100%*

*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. ***Organic Chemistry Concepts and Applications for Medicinal Chemistry,*** **Joseph E. Rice, Academic Press, 2014, Softcover; ISBN 9780128007396 or eBook; ISBN 9780128008324.** 2. **An Introduction to Medicinal Chemistry, fifth edition, Graham L. Patrick, 2013.**
Supportive References	1. **The Organic Chemistry of Drug Design and Drug Action, 3rd Edition" Richard B. Silverman.**
Electronic Materials	• **https://en.wikipedia.org/wiki/Chemical_industry** • **http://www.rsc.org/learn-chemistry** • **https://www.khanacademy.org/science/organic-chemistry** • **https://www2.chemistry.msu.edu/faculty/reusch/virttxtjml/intro1.htm** • **https://chem.libretexts.org/**
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Lecture room(s) for groups of 50 students
Technology equipment (projector, smart board, software)	Smart board, Data show, Black board, internet
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Student	Likert-type Survey CES) Indirect
Effectiveness of Students' assessment	Instructor & Course coordinator	Classroom evaluation (direct & indirect
Quality of learning resources	Program coordinator	Indirect
The extent to which CLOs have been achieved	Assessment committee	Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Physical Sciences Department Council
REFERENCE NO.	Meeting (3)
DATE	12/03/2024 -02/09/1445