



Course Specification

(Bachelor)

Course Title: : Medicinal Chemistry - 2

Course Code: PHCH 417

Program: Pharmaceutical Sciences

Department: Pharmaceutical Chemistry

College: Pharmacy

Institution: Najran University

Version: 3

Last Revision Date: 18/11/2024

Table of Contents

A. General information about the course:	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content	5
D. Students Assessment Activities	6
E. Learning Resources and Facilities	6
F. Assessment of Course Quality	7
G. Specification Approval	7

A. General information about the course:

1. Course Identification

1. Credit hours: 3 (2+1)

2. Course type

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

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

4. Course general Description:

The course describes the medicinal chemistry of an important class of drugs that act on the CNS; the therapeutic agents that are used to treat many of the CNS-based disorders are studied such as antipsychotic agents, sedative, hypnotic, anti-depressants analgesics and general anesthetics. General information and danger of drug abuse are illustrated. The course exposes the students to the study of SAR, mechanism of action and the pharmacokinetics of these drugs i.e. absorption, distribution, metabolism and excretion of these agents and the factors that may affect them.

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

PHCH 416

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

None

7. Course Main Objective(s):

- Identify functional groups and ring systems that characterize each of the drug classes.
- Identify the structural features and functional groups important for the pharmacological actions of each drug class.
- Recognize how tiny changes in structural features and functional groups may affect potency and activity of each drug class.
- Understand the mechanism of action (where known) of the active drugs.
- Make intelligent hypotheses about the biological activity, mechanism, and/or metabolism of an unknown compound based on the structural features found in the molecule.
- Describe the cross-reactivity between drug classes based on structure-activity relationships.

At the end of this course the students are expected to understand the role of medicinal chemistry in discovery, development, synthesis, and study of therapeutic agents.

2. Teaching mode (mark all that apply)





No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	0
4.	Tutorial	0
5.	Others (specify)	0
Total		60

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

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Describe basic medicinal chemistry concepts, SAR principles and theories about GIT drugs, analgesics and anti-psychotics drugs	K3	Lectures	Written exam
2.0	Skills			
2.1	Predict structural features of drugs and major activities based on their structural features to be able improve the drugs activity and solve its structural problems.	S1	Lectures Active learning Practical work	Written exam Practical Exam





Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
2.2	Communicate clearly by verbal and writing means	S5	Group discussion	Assignment Lab Reports
3.0	Values, autonomy, and responsibility			
3.1	Show time and self-management in class or labs as an individual and as a part of team	V4	Practice sessions	Observation cards

C. Course Content (Theoretical)

No	List of Topics	Contact Hours
1.	Gastrointestinal Drugs - Antacid agent - H2 blocker - PBI - Prostaglandin analogue	5
2.	Analgesics - Narcotic Analgesics - Non-Steroidal Anti-Inflammatory Drugs	6
3.	Anesthesia agents - General Anesthesia - Local Anesthetics	6
4.	CNS depressants - Sedative and hypnotics - Anti-anxiety agents - Schizophrenia	6
5.	CNS Stimulants - Analeptics - Antidepressants	4
6.	Drug abuse	1
7.	Anticonvulsants	2
Total		30

Course Content (Practical)

No	List of Topics	Contact Hours
1	1- General Information & Lab Results Reporting	30
2	Recrystallization	
3	Synthesis of Aspirin (NSAID)	
4	Synthesis of Paracetamol (NSAID)	
5	Synthesis of benzocaine (Local Anesthetic)	





6	Synthesis of Phenytoin (CNS depressants)	
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz-1	6	5
2.	Midterm	9	20
3.	Quiz-2	12	5
4.	Assignment	12	5
5.	Observation card	14	5
6.	Practical quiz	13	5
7.	Final practical exam	16	15
8.	Final theoretical exam	17-19	40
9.	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	Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry
Supportive References	Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry PowerPoints slides
Electronic Materials	http://www.dlaf.nu.edu.sa/ http://www.drugdesign.com/web/
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Suitable lecture room equipped with data show and internet and sufficient number of seats. Suitable laboratories equipped with health and safety tools, internet, and enough seats.
Technology equipment (projector, smart board, software)	Computers, data show, sound systems and internet





Items	Resources
Other equipment (depending on the nature of the specialty)	<ul style="list-style-type: none"> • Melting point apparatus • Oven • Condenser • Magnetic Hot Plate Stirrer • Water bath

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Head of departments and students	Indirect Questionnaires (indirect)
Effectiveness of Students assessment	Faculty members and students	Indirect Questionnaires (indirect)
Quality of learning resources	Students	Questionnaires (Indirect)
The extent to which CLOs have been achieved	Student peer reviewer	Direct Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Pharmaceutical Chemistry Department Council
REFERENCE NO.	4-2024
DATE	18/11/2024

