



Course Specification

(Bachelor)

Course Title: Pharmaceutical Organic Chemistry-2

Course Code: PHCH 212

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: (4th Level / 2nd year)

4. Course general Description:

The main purpose of this course is to understand the basic concept of heterocyclic compounds which are the structural back bone of drugs. In addition understanding the stereo-chemical aspects of drugs and carbohydrates in drug action. The practical part deals with various laboratory techniques used for characterization and synthesis of different organic compounds

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

PHCH 211

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

None

7. Course Main Objective(s):

The main purpose of this course is to understand the chemistry of heterocycles and carbohydrates which are the structural back bone of various medicinally active drugs. Also, understand the effect of stereochemistry on drugs

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 the chemistry of carbohydrates and heterocycles.	K3	Lectures	Written exam Assignments
1.2	Outline syntheses and reactions of different heterocycles and monosaccharides.	K3	Lectures	Written exam Assignments
2.0	Skills			
2.1	Interpret the stereochemistry of various medicinal active compounds and exploration of their interaction with receptors.	S1	Lectures Data interpretation	Written exam
2.2	Apply suitable synthetic pathways and purification methods of the covered drug examples.	S3	Laboratory work	Practical exam
2.3	Develop effective communication (verbal and writing) by	S5	Laboratory work	Reports



Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
	knowing chemistry terminology.			
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate effective and reasonable solutions for rising problems based on the available information, accountability, confidence, and independent thinking	V4	Practical sessions	Observation cards

C. Course Content (theoretical)

No	List of Topics	Contact Hours
1.	Heterocyclic Compounds Chemistry "Introduction"	1
2.	Nomenclature of Heterocyclic Compounds <ul style="list-style-type: none"> Common Nomenclature The Hantzsch-Widman Nomenclature The Replacement Nomenclature 	5
3.	6-Membered Heterocyclic Compounds <ul style="list-style-type: none"> Physical properties Chemical properties Preparation 	6
4.	5-Membered Heterocyclic Compounds <ul style="list-style-type: none"> Physical properties Chemical properties Preparation 	6
5.	Fused Heterocyclic Compounds <ul style="list-style-type: none"> Nomenclature Preparation Physical properties Chemical properties 	4
6.	Stereochemistry and Stereodynamic of Organic Compounds	2
7.	Carbohydrates Chemistry <ul style="list-style-type: none"> Definition Classification Stereochemistry Chemical properties 	6





Total	30
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Course Content (Practical)

No	List of Topics	Contact Hours (P)
1.	General Information and Safety Rules	2
2.	Heating Sources and Reflux	3
3.	Drying, Filtration, & Decolorization	4
4.	Recrystallization Techniques	3
5.	Melting Point Determination	3
6.	Boiling point determination	3
7.	Synthesis of Acetanilide	4
8.	Synthesis of 7-Hydroxy-4-methyl coumarin	4
9.	Revision	2
10.	Final practical exam on week number 14	2
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	5	10
2.	Midterm	7-9	20
3.	Assignment	12	5
4.	Observation card	2-13	10
5.	Practical reports or Practical quiz	12	5
6.	Final Practical exam	16	10
7.	Final theoretical exam	17-19	40
8.	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	<p>T. W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder-Organic Chemistry-Wiley (2013), 11th edition.</p> <p>Robert Thornton Morrison, Robert Neilson Boyd, Organic Chemistry, 7th edition; Prentice Hall, 2010</p>
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Supportive References	T. W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder-Organic Chemistry-Wiley (2013), 11 th edition. PowerPoints slides
Electronic Materials	http://www.dlaf.nu.edu.sa/ www.organic-chemistry.org/
Other Learning Materials	ChemDraw program

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 sufficient number of seats.
Technology equipment (projector, smart board, software)	Computers, data show, sound systems and internet
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 and students members	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



