

Republic of Yemen

Ministry of Higher Education & Scientific Research

21 September University for Medicals and Applied Sciences



Faculty of Clinical Pharmacy

Bachelor of Clinical Pharmacy & Pharm. D.

Course Specification of
Medicinal Chemistry-III

Course Code. (02.04.274)

2022



T4: This Template is Developed and Approved by CAQA-Yemen, 2023

Prepared by:	Reviewed by:	Head of the Department:	Vice Dean for Quality affairs	Dean of College:
Prof. Ali G. Al-kaf	Prof.. Mukhtar Al-Gharafi	Dr. -----	Dr. Abdulelah Thabet	Dr. Ali Alyahawi

I. Course Identification and General Information:					
1	Course Title:	Medicinal Chemistry-III			
2	Course Code & Number:	02.04.274			
3	Credit hours:	C.H			
		Th.	Seminar	Pr	Tr.
		Theory 3	Seminars, exercises..	Practical	Field, training
4	Study level/ semester at which this course is offered:	4 th Level – 1 st Semester			
5	Pre –requisite (if any):	Organic Chemistry and Analytical Chemistry			
6	Co –requisite (if any):	Pharmacology			
7	Program (s) in which the course is offered:	Bachelor of Clinical Pharmacy & Pharm D			
8	Language of teaching the course:	English			
9	Study System	Semester based System			
10	Mode of delivery:	Regular-Full Time			
11	Location of teaching the course:	Faculty of Clinical Pharmacy			
12	Prepared By:	Prof.Dr.Ali Gamal Al-kaf			
13	Date of Approval	09.2022			

II. Course Description:

The course topics shall cover nomenclature, classification, synthetic procedures of compounds mentioned under each category, structure activity relationship, mode of action and therapeutic use.

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III. Course Intended learning outcomes (CILOs)		Referenced PILOs
a.1	Define the structure activity relationship of selected course compounds.	A 1, A 2
a.2	Describe the basic principles of mechanism of action for active groups in pharmaceutical chemistry.	A 1, A3
b.1	Design new selected medicinal compounds.	B 1
b.2	Compare between selected different medicinal compounds by identification tests and assay.	B 1
c.1	Prepare new selected chemical compounds and derivatives according to structure activity relationship (SAR).	C1, C 2
c.2	Identify the relationship between structure and activity according to different functional groups.	C 2
d.1	Work separately or in a team to research and prepare a scientific topic.	D 1
d.2	Present clearly and effectively scientific topic in a tutorial, a staff meeting or the yearly scientific day.	D 2, D 3

(A) Alignment Course Intended Learning Outcomes of Knowledge and Understanding to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
a1- Define the structure activity relationship of selected course compounds.	Lectures	quizzes
a2- Describe the basic principles of mechanism of action for active groups in pharmaceutical chemistry.	Small group discussion	Mid exam

(B) Alignment Course Intended Learning Outcomes of Intellectual Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
b1- Design new selected medicinal compounds.	Lectures	Written examination for

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		assessment
b2-Compare between selected different medicinal compounds by identification tests and assay.	Small group discussion	oral examination for assessment

© Alignment Course Intended Learning Outcomes of Professional and Practical Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
C1- Prepare new selected chemical compounds and derivatives according to structure activity relationship (SAR).	Lectures	Written examination for assessment
C2- Identify the relationship between structure and activity according to different functional groups.	Small group discussion	oral examination for assessment

(D) Alignment Course Intended Learning Outcomes of Transferable Skills to Teaching Strategies and Assessment Strategies:		
Course Intended Learning Outcomes	Teaching strategies	Assessment Strategies
d1-Work separately or in a team to research and prepare a scientific topic.	Lectures	Written examination
d2-Present clearly and effectively scientific topic in a tutorial, a staff meeting or the yearly scientific day.	Small group discussion	oral examination for assessment

I. Course Content:					
A – Theoretical Aspect:					
Order	Units/Topics List	Learning Outcomes	Sub Topics List	Number of Weeks	contact hours
1	Antibiotics	a1,a2,b1, b2,c1	- β-Lactams (penicillin's and cephalosporin's) - Aminoglycosides - Tetracycline - Macrolides - Lincomycines - Polypeptides - Unclassified antibiotics	4	12

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2	Antineoplastic agents	a1,a2,b1, b2,c1,c2	- Alkylating agents, antimetabolites - Antibiotics, plant products, hormones - Immunotherapy, miscellaneous.	2	6
3	Anti-infective agents	a1,a2,b1, b2,d1	- Alcohols, phenols, oxidizing agents, iodine, chlorine compound, cationic surfactants, medicinal dyes, mercury compound preservatives.	1	3
4	Midterm exam	a1,a2,b1, b2,c1,c2		1	3
5	Hormones	a1,a2,b1, b2,d2	- Insulin - Oral hypoglycemic agents - Thyroid hormones - Antithyroid drugs - Steroid hormones - Hormones of pituitary.	2	6
6	Antimycobacterial agents	a1,a2,b1, b2,c1,d3	- Antileprotic drugs - Antituberculous drugs	1	3
7	Quinolones	a1,a2,b1, b2	- Classification - Mechanism of action - SAR - Pharmacokinetic - Drug-Drug interaction	1	3
8	Analgesics	a1,a2,b1, b2,c1	- NSAIDs - Opioid analgesics - Antitussive	1	3
9	Antiprotozoal agents	a1,a2,b1, b2	- Antamebics - Trypanocidal agents - Leishmanicides - Anthelmintics - Antiscabious and - Antipedicular agents - Antimalarial	2	6
10	Final-term Exam	a1,a2,b1, b2,c1,c2		1	3
Number of Weeks /and Units Per Semester				16	48

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B - Practical Aspect: (if any)				
Order	Tasks/ Experiments	Number of Weeks	contact hours	Learning Outcomes
1	Nil			
2				
Number of Weeks /and Units Per Semester				

I. Teaching strategies of the course:
▪ Lectures. ▪ Small group discussion

II. Assignments:				
No	Assignments	Aligned CILOs(symbols)	Week Due	Mark
1	Assignment 1: To provide the knowledge of chemistry of drugs with special references to their pharmaceutical and medicinal usage.	a 1, a 2 b 1, b2,c1,c2	1-2	3
2	Assignment 2: To provide the knowledge about the relationship of chemical structure and therapeutic properties.	a 1, a 2, b 1, b2 c 1, c2, d 1, d 2	3-6	4
3	Assignment 3: To correlate medicinal chemistry facts with manufacture drugs and clinical application.	a 1, a 2, b 1, b2 c 1, c2, d 1, d 2	9-12	3
Total				10

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III. Schedule of Assessment Tasks for Students during the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Homework/Tasks/Assignments	Week 1-12	10	10%	a 1, a 2, b 1, b2 c 1, c2, d 1, d 2
2	Mid-Term Examination	Week 8	20	20%	a 1, a 2, b 1, b2
3	Practical Exam	Week 13	20	20%	c 2, c5
4	Final-Term Examination	16	50	50%	a 1, a 2, b 1, b2
	Total		100	100%	

IV. Learning Resources:

- Written in the following order: (Author - Year of publication – Title – Edition – Place of publication – Publisher).

1- Required Textbook(s) (Latest edition).

1. Wilson and Gisvold's.(2004).Textbook of Organic Medicinal and Pharmaceutical Chemistry ed.-New York.;980
2. Al-kaf and Al-rahawi (2014). Textbook of Medicinal and Pharmaceutical Chemistry.-2 ed.- Al-jil Al-jadid Publishers.Yemen;522

2- Essential References.

1. Al-kaf Ali Gamal (2017). Medicinal Chemistry.-3 ed.-Hail centre Publisher.Yemen;383.
2. David A. Williams and Thomas L. Lemke. Foye's (2008). Principles of Medicinal Chemistry USA. .

3- Electronic Materials and Web Sites etc.

1. www.pubmed.com
2. www.drugs.com
3. www.drugdesign.com/web/
4. <https://www.rti.org/service-capability/drug-discovery-and-development>

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I. Course Policies: (Based on the Uniform Students' Bylaw (2007))	
1	Class Attendance: Class Attendance is mandatory. A student is considered absent and shall be banned from taking the final exam if his/her absence exceeds 25% of total classes.
2	Tardiness: A student will be considered late if he/she is not in class after 10 minutes of the start time of class.
3	Exam Attendance/Punctuality: No student shall be allowed to the exam hall after 30 minutes of the start time, and shall not leave the hall before half of the exam time has passed.
4	Assignments & Projects: Assignments and projects must be submitted on time. Students who delay their assignments or projects shall lose the mark allocated for the same.
5	Cheating: Cheating is an act of fraud that results in the cancelation of the student's exam or assignment. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
6	Forgery and Impersonation: Forgery/Impersonation is an act of fraud that results in the cancelation of the student's exam, assignment or project. If it takes place in a final exam, the penalties stipulated for in the Uniform Students' Bylaw (2007) shall apply.
7	Other policies: The University official regulations in force will be strictly observed and students shall comply with all rules and regulations of the examination set by the Department, Faculty and University Administration.

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Faculty of Clinical Pharmacy

Bachelor of Clinical Pharmacy & Pharm. D.

Course Plan (Syllabus) of Medicinal Chemistry-III

Course Code. 02.04.274

I. - Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Prof. Dr. Ali Gamal Al-kaf	Office Hours					
Location& Telephone No.	Sana'a- 00967-773266696	SAT	SUN	MON	TUE	WED	THU
E-mail	Alialkaf21@gmail.com						

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		assessment
b2-Compare between selected different medicinal compounds by identification tests and assay.	Small group discussion	oral examination for assessment

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10	Final-term Exam	a1,a2,b1, b2,c1,c2		1	3
Number of Weeks /and Units Per Semester				16	48

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3	Assignment 3: To correlate medicinal chemistry facts with manufacture drugs and clinical application.	a 1, a 2, b 1, b2 c 1, c2, d 1, d 2	9-12	3
Total				10

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3- Electronic Materials and Web Sites etc.	
	1. www.pubmed.com 2. www.drugs.com 3. www.drugdesign.com/web/ 4. https://www.rti.org/service-capability/drug-discovery-and-development

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