Course specification
2017- 2018
Faculty of Pharmacy
Mansoura University

Fifth Level

Medicinal Chemistry 3

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Medicinal Chemistry
Course title: Medicinal Chemistry 3
Course code: PD 513

Program on which the course is given	B. Pharm
Academic Level	Fifth Level, First semester, 2017-2018
Date of course specification approval	11/2/2018

1. Basic Information: Course data:

Course title:	Medicinal Chemistry 3	Code: PD 513
Specialization:	Pharmaceutical	
Prerequisite:	Pharmaceutical organic chemistry 2	
Teaching Hours:	Lecture: 2	Practical: 2
Number of units: (credit hours)	3	

2. Course Aims:

2.1. Recognizing the relationships between the chemical structures of different chemotherapeutic drugs and biological activities.
2.2. Understand the different mode of action of different classes of chemotherapeutic agents.

3. Intended learning outcomes (ILO_S):

a- Knowledge and understanding

a1	List the various structural subclasses of chemotherapeutic drugs and identify the representative pharmacophore in each pharmacological class
a2	Explain the molecular mechanisms of drug action.
a3	Realize how drug-receptor interactions occur based on the pharmacophoric group in each pharmacological class
a4	Outline the general synthetic pathways of different drug classes.

b- Intellectual skills

b1	Predict the major pharmacological action and therapeutic activity of a given drug based on the molecular structure.

b2	Interpret the structural feature of a given drug in relation to affinity to a specific receptor.
b3	Predict pathways of metabolic degradation based on vulnerability of drug functional groups to metabolizing enzymes.

c- Professional and practical skills

c1	Apply the given information to evaluate the activity of related compounds within a pharmaceutical class based on structural similarities and dissimilarities.
c2	Detect the possible side effects and toxicity to a given drug molecule based on its structural features.
c3	Counsel the patients about proper use of antibiotics and prescribe therapeutic recommendations based on an understanding of drug chemistry'
c4	Analyze quantitatively drug concentration in pharmaceutical preparations.

d- General and transferable skills

d1	Practice independent learning needed for continuous professional development.
d2	Work effectively in a team.
d3	Implement writing and presentation skills.
d4	Demonstrate creativity and time management abilities.

4. Contents:

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1.	Introduction to chemotherapy + tetracyclines	2	2 hours	
2.	Penicillins + Macrolides	2	2 hours	
3.	β-Lactamase Inhibitors + Sulphonamides	2	2 hours	
4.	Cephalosporins + Antifungal	4	4 hours	
5.				
6.	Non-classical Antibiotics + Antiprotozoal	2	2 hours	
7.	**Mid-term Exam**			
8.	Aminoglycosides + Anthelmientics	2	2 hours	
9.	Quinolones + Antimycobacterials	2	2 hours	
10.	Lincomycins + Amphenicols + Anticancer	2	2 hours	
11.	Antimalarial drugs + Anticancer	2	2 hours	
12	Antiviral + Anticancer	2	2 hours	

14.	Final written and oral exams			
Practical topics				
Week No	**Topics**	**No. of hours**	**Lecture credit hours**	**Practical credit hours**
1-3	Chem 3D	6		3 hours
4.	Chem3D exam	2		1 hour
5.	Assay of penicillins and cephalosporines	2		1 hour
6.	Assay of sulphonamides, Isoniazide and busulfan	2		1 hour
7.	**Mid-term Exam**			
8.	Assay exam and sheet exam	2		1 hour
9.	Case study	2		1 hour
10.	Case study	2		1 hour
11	Case study	2		1 hour
12.	Case study Sheet	2		1 hour

5. Teaching and learning Methods:

5.1	Lectures using whiteboard
5.2	Lectures using Data show, PowerPoint presentations
5.3	Research assignments
5.4	Use of computer software for drawing of chemical structures
5.5	Case study
5.6	Discussion session

6. Student Assessment:

a- Assessment methods

1. Written exam	To assess understanding, intellectual and professional skills
2. Practical exam	To assess professional and practical skills
3. Oral	To assess knowledge, understanding, intellectual skills, general skills and confidence
4. Case study	To assess the skills of problem-solving and data presentation

b- Assessment schedule

Assessment 1	Practical	6th week and 11th week
Assessment 2	Mid-term	7th week
Assessment 3	Oral	14th week
Assessment 4	Written	14th week

c- Weighting of assessments

1.	Mid-term examination	10 %
2.	Final-term examination	50 %
3.	Oral examination	15 %
4.	Practical examination and Semester work	25 %
Total		100 %

7. List of References

No	Reference	Type
1.	Practical course notes prepared by the department staff members	Course notes
2.	"Foye's Principles of Medicinal Chemistry", 8th edition, (David A. Williams, Thomas L. Lemke & William O. Foye, Editors), Lippincott Williams & Wilkins, 2017	Book
3.	"Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry" 12th Edition, (J. H. Block and J. M. Beale Jr, Editors), Lippincott Williams & Wilkins, Philadelphia, PA, 2011	Book
4.	Graham L. Patrick; "An Introduction to Medicinal Chemistry" Oxford University Press, USA; 6th edition, 2017	
5.	Thomas, Gareth, "Fundamentals of Medicinal Chemistry" Wiley-Blackwell; Kindle Edition (2013).	Book

8. Matrix of knowledge and skills of the course

No	Topics	Basic knowledge	Intellectual skills	Professional skills	General skills
1	Introduction to chemotherapy	a2,a3	b2	c2	d1, d3, d4
2	Penicillins and Cephalosporins	a1, a2, a3, a4	b1, b2, b3	c1, c2, c3, c4	d1, d3
3	Non-classical antibiotics	a1, a2, a3, a4	b1, b2, b3	c1, c2, c3, c4	d1, d4
4	Alkylating agents, antimetabolites, other antineoplastic agents	a1, a2, a3, a4	b1, b2, b3	c1, c2, c3, c4	d1, d3
5	Quinolones, tetracyclins, chloramphenicol, UTIs	a1, a2, a3, a4	b1, b2, b3	c1, c2, c3, c4	d1, d3, d4
6	Macrolides, aminoglycosides, lincomycins,	a1, a2, a3, a4	b1, b2, b3	c1, c2, c3, c4	d1, d3, d4
7	Sulfonamides, antiprotozoal drugs, anthelmintics	a1, a2, a3, a4	b1, b2, b3	c1, c2, c3, c4	d1, d3
8	Practical course and case study	a4	b4	c4	d1, d2, d3, d4

Course Coordinator:	Naglaa Ibrahim Abdelaziz
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