كلية الصيدلة

جامعة المنصورة

توصيف مقررات برنامج
بكالوريوس الصيدلة
لائحة فارم دى
2024/2023

Created By: Quality Assurance Unit

فهرس المحتويات

بكالوريوس الصيدلة (فارم دي – **Pharm D**)

Course Specification

Academic year: 2023/2024

Course name: **Pharmaceutical analytical chemistry 3**	**اسم المقرر : كيمياء تحليلية صيدلية 3**
Academic Level: Second	**المستوى الأكاديمي : الثاني**
Scientific department: Pharmaceutical analytical chemistry	**القسم العلمي : الكيمياء التحليلية الصيدلية**
Head of Department: **Prof. Dr. Jenny Jeehan Nasr**	**رئيس القسم : أ.د/ جيني جيهان نصر**
Course Coordinator: **Prof. Dr. Yasser El-shabrawy**	**منسق المقرر : أ.د/ ياسر الشبراوي**

University	Mansoura
Faculty	Pharmacy
Department offering the course	Pharmaceutical analytical chemistry
Department supervising the course	Pharmaceutical analytical chemistry
Program on which the course is given	Bachelor in Pharmacy - Pharm D
Academic Level	Second
Date of course specification approval	10 /9 /2023

A- Basic Information: Course data :

Course Title	Pharmaceutical analytical chemistry 3
Course Code	PA 213
Prerequisite	Registration
Teaching Hours/ week: Lecture	2
Teaching Credit Hours: Practical/ tutorial	1
Total Credit Hours	3

B- Professional Information:

1. Course Aims:

1- The course provides the basic concepts of quantitative chemical methods of analysis, including oxidation reduction titration and electrochemical analysis (potentiometry, conductomertry, polarography) and covers the application of these methods to pharmaceutical compounds.

2- The course also describes the basic principles of applying different analytical methods to environmental analysis such as water analysis including physical and chemical examination of water.

2. Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1: fundamental knowledge

Program K. elements no	Course K. elements no	Course K. elements
(1.1.1)	(1.1.1.1)	**Clarify the theory and principles of reduction oxidation titration and electrochemical methods of analysis.**
(1.1.3)	(1.1.3.1)	**Combine the principles of different analytical techniques for the estimation of pharmaceutical compounds and analysis of water.**

Domain 2: professional and ethical practice

Program K. Elements no	Course K. Elements no	Course K. Elements
(2.2.1)	(2.2.1.1)	**Select and apply redox or electrochemical analytical methods to analyze pharmaceutical materials and water resources.**
(2.2.3)	(2.2.3.1)	**Demonstrate the principles of various analytical instruments used for the analysis of different raw materials and water resources.**
(2.2.4)	(2.2.4.1)	**Explain the principles of pharmaceutical calculations and their applications to pharmaceutical and environmental analysis.**
(2.3.1)	(2.3.1.1)	**Select appropriate methods for handling and disposal of materials used in pharmaceutical analysis.**
(2.3.2)	(2.3.2.1)	**Illustrate and employ ethical and safety guidelines for handling and disposal of pharmaceutical materials.**

Domain 4: personal practice

Program K. elements no	Course K. elements no	Course K. elements
(4.1.1)	(4.1.1.1)	**Show responsibility for team behavior and exhibit time management skills.**
(4.1.2)	(4.1.2.1)	**Retrieve and analyze information to solve problems, and work individually or effectively in a team.**
(4.2.2)	(4.2.2.1)	**Utilize modern technologies and media to display effective presentation skills.**
(4.3.1)	(4.3.1.1)	**Implement self-assessment to improve personal competencies.**
(4.3.2)	(4.3.2.1)	**Practice self-learning needed to improve professional skills.**

3. Course Contents:

A) Theoretical part

Week No.	Topics	Lecture Hours
1	**Introduction to redox titrations.**	2
2	**Nernst equation and factors affecting redox potential.**	2
3	**Applications of redox reactions**	2
4	**Pharmaceutical applications of redox reactions.**	2
5	**Potentiometry principles and instrumentation.**	2
6	**Potentiometric titration and its pharmaceutical applications.**	2
7	**Conductometry principles and instrumentation, application of Conductometry**	2
8	**Introduction to polarography and instrumentation**	2
9	**Polarography applications.**	2
10	**Introduction to water analysis.**	2
11	**physical examination of water.**	2
12	**Chemical examination of water.**	2
13	**Water treatment (self-learning).**	2
14	**Revision and quiz**	2
15	**Final written and oral exam**	--

B) Practical part

Week No.	Practical topics	credit hours
1	Determination of oxalic acid, oxalic acid/acetic acid mixture	1
2	Determination of Potassium persulphate, H_2O_2	1
3	Determination of Ferrous/Ferric mixture.	1
4	Determination of Iodine/Iodide mixture, ascorbic acid.	1
5	Determination of Water acidity and alkalinity	1
6	Determination of chloride, chlorine contents in water.	1
7	Determination of Water hardness by EDTA method	1
8	Midterm exam	-
9	Conductometric titration and problems	1
10	Determination of copper, iron contents in water by nesslerization	1
11	Polarography problems.	1
12	Determination of Water hardness by EDTA method.	1
13	Potentiometric titration, problems on Potentiometry.	1
14	Sheet and Practical Exam (OSPE)	1

4-Teaching and Learning Methods:

No.	Teaching and Learning Methods	Week
4.1	Computer aided learning: a- Lectures using data show, PowerPoint presentations. b- Distant learning 3- Online learning through me mans "Mansoura university "as recorded – video lectures. 4- Interactive discussion through My Mans.	1-14
4.2	Practical session using chemicals, laboratory equipment (instruments and glasswares) and/or tutorial.	1-14
4.3	Self-learning	13
4.4	Class activity: group discussion, problem solving offline and online.	9,11,12

5- Student Assessment:

a- Assessment Methods:

Assessment Methods	Key elements to be assessed
1- Periodical exam/ course work	1.1.1.1, 1.1.3.1, 2.2.1.1, 2.2.3.1, 2.2.4.1, 4.1.1.1,4.1.2.1 ,4.3.2.1
2-Practical exam using OSPE	2.2.1.1, 2.2.3.1, 2.2.4.1, 2.3.1.1, 2.3.2.1, 4.1.1.1,4.1.2.1, 4.2.2.1,4.3.1.1
3-Written exam	1.1.1.1, 1.1.3.1, 2.2.1.1, 2.2.3.1, 2.2.4.1
4-Oral exam	1.1.1.1, 1.1.3.1, 2.2.1.1, 2.2.3.1, 2.2.4.1, 4.1.1.1,4.1.2.1, 4.2.2.1

b- Assessment schedule

Assessment 1	**Periodical / Course work)**	**7-9th week**
Assessment 2	**Practical exam (OSPE)**	**14th week**
Assessment 3	**Written exam**	**15th week**
Assessment 4	**Oral exam**	**15th week**

c- Weighing of assessment

1	**Periodical / Course work**	**15%**
2	**Practical exam**	**25%**
3	**Written exam**	**50%**
4	**Oral exam**	**10%**
Total		**100%**

6- Facilities required for teaching and learning

-Class room	**Data show- Computers, Internet.**
- Laboratory facilities	**equipment, tools, glasswares**
- Library	**Faculty library**

7- List of References:

No	Reference	Type
1.	Electronic book, prepared by Staff Members of the Department	Course notes
2.	Practical book and report notes, prepared by Staff Members of the Department	Course notes
3.	Recorded videos, prepared by Staff Members of the Department	Videos on platform
4.	Pharmaceutical Analytical Chemistry, Quantitative Analysis, Amer, M.M. Faculty of Pharmacy, Cairo University	Essential Book
5.	Fundamentals of Analytical Chemistry, Douglas A.; Skoog; Donald M., West, F. James Holler,Stanely, R.Crouch Thomson, Australia , 9th Ed. (2013).	Essential Book
6.	Quantitative Chemical Analysis, Daniel C. Books Harris, 8th ed., W.H. Freeman and Company,New York (2011)	Essential Book
7.	Innovations in Monitoring With Water-Quality Sensors With Case Studies on Floods, Hurricanes, and Harmful Algal Blooms, Chapter 10, Donna N. Myers, Editor(s): Satinder Ahuja, Separation Science and Technology, Academic Press, Volume 11, 2019,	Supplementary Textbooks
8.	Anual of methods of analysis of foods(water) food safety and standards authority of india ministry of health and family welfare government of India New Delhi 2016	Web
9.	Techniques of Water-Resources Investigations of the United States Geological Survey.	Web
10.	http://www.google scholar.com/ http://www.ekb.eg	Websites

8- Matrix:

Matrix 1. Course contents and course key elements

A) Theoretical part:

Course contents	Course Key elements											
	Domain: 1		Domain: 2					Domain: 4				
	1.1.1.1	1.1.3.1	2.2.1.1	2.2.3.1	2.2.4.1	2.3.1.1	2.3.2.1	4.1.1.1	4.1.2.1	4.2.2.1	4.3.1.1	4.3.2.1
Introduction to redox titrations.	✓											
Nernst equation and factors affecting redox potential.	✓				✓							
Applications of redox reactions	✓	✓	✓		✓	✓	✓					
Pharmaceutical applications.	✓	✓	✓	✓	✓	✓	✓					
Potentiometry principles and instrumentation.	✓	✓	✓	✓				✓		✓	✓	

Potentiometric titration and its pharmaceutical applications.	✓			✓	✓				✓	✓		
Conductometry principles and instrumentation, application of Conductometry.	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Introduction to polarography and instrumentation	✓	✓	✓	✓	✓			✓	✓	✓	✓	
Polarography applications.				✓	✓	✓	✓		✓	✓		
Introduction to water analysis.		✓	✓	✓	✓	✓	✓	✓		✓		✓
physical examination of water.		✓	✓	✓	✓	✓	✓	✓				

Chemical examination of water.		✓	✓	✓	✓	✓	✓	✓				
Water treatment (self-learning).		✓	✓	✓	✓	✓	✓	✓				✓

C) Practical part:

Course contents	Course Key elements											
	Domain: 1		Domain: 2					Domain: 4				
	1.1.1.1	1.1.3.1	2.2.1.1	2.2.3.1	2.2.4.1	2.3.1.1	2.3.2.1	4.1.1.1	4.1.2.1	4.2.2.1	4.3.1.1	4.3.2.1
Determination of oxalic acid, oxalic acid⁄acetic acid mixture			✓	✓	✓	✓	✓					
Determination of Potassium persulphate, H_2O_2			✓	✓	✓	✓	✓					
Determination of Ferrous⁄Ferric			✓	✓	✓	✓	✓					

mixture.												
Determination of Iodine/Iodide mixture, ascorbic acid.			✓	✓	✓	✓	✓					
Determination of Water acidity and alkalinity			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Determination of chloride, chlorine contents in water.			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Determination of Water hardness by EDTA method			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Conductometric titration and problems			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Determination of copper, iron contents in			✓	✓	✓	✓	✓	✓	✓	✓	✓	

water by nesslerization												
polarography problems. Determination of Water hardness by EDTA method.			✓	✓	✓	✓	✓	✓	✓	✓	✓	
Potentiometric titration, problems on Potentiometry.			✓	✓	✓	✓	✓	✓	✓	✓	✓	

Matrix 2. Between course contents, methods of learning, and assessment

A) Theoretical part:

Course Contents	Teaching and Learning methods					Assessment methods			
	Lecture	Hybrid leaning	Comp. aided learning	Lab sessions	Self-learning	Corse Work	Practical/ Tutorial	Written	Oral

Introduction to redox titrations.	✓					✓		✓	✓
Nernst equation and factors affecting redox potential.	✓							✓	✓
Applications of redox reactions	✓							✓	✓
Pharmaceutical applications of redox reactions.	✓							✓	✓
Potentiometry principles and instrumentation.	✓							✓	✓
Potentiometric titration and its pharmaceutical applications.	✓					✓		✓	✓
Conductometry principles and instrumentation, application of Conductometry	✓							✓	✓
Introduction to polarography and instrumentation	✓							✓	✓
Polarography applications.	✓							✓	✓

Introduction to water analysis.	✓							✓	✓
physical examination of water.	✓							✓	✓
Chemical examination of water.	✓							✓	✓
Water treatment (self-learning).	✓	✓			✓	✓		✓	✓

B) Practical part:

Course Contents	Teaching and Learning methods					Assessment methods			
	Lecture	Hybrid learning	Comp. aided learning	Lab sessions	Self-learning	Corse Work	Practical/Tutorial	Written	Oral
Determination of oxalic acid, oxalic acid⁄acetic acid mixture				✓			✓		
Determination of Potassium persulphate, H_2O_2				✓			✓		
Determination of Ferrous⁄Ferric mixture.				✓			✓		
Determination of Iodine⁄Iodide mixture, ascorbic acid.				✓			✓		
Determination of Water acidity and alkalinity				✓			✓		
Determination of chloride, chlorine contents in water.				✓			✓		

Determination of Water hardness by EDTA method				✓			✓		
Conductometric titration and problems				✓			✓		
Determination of copper, iron contents in water by nesslerization				✓			✓		
polarography problems. Determination of Water hardness by EDTA method.				✓			✓		
Potentiometric titration, problems on Potentiometry.				✓			✓		

Course Coordinator	Prof. Dr. Yasser El-Shabrawy 
Head of Department	Prof. Dr. Jenny Jeehan Nasr 

Date: 10/9/ 2023

بكالوريوس الصيدلة (فارم د - Pharm D)

Course Specification

Academic year: 2023/2024

Course name: Pharmaceutical Organic Chemistry-3	**اسم المقرر:** **كيمياء عضوية صيدلية-3**
Academic Level: Second Level	**المستوى الأكاديمي :** **الثانى**
Scientific department: Pharmaceutical Organic Chemistry	**القسم العلمي :** الكيمياء العضوية الصيدلية
Head of Department: Prof. Shahenda M. El-messery	**رئيس القسم :** أ.د/ شاهنده متولى المسيرى
Course Coordinator: Prof. Fatma E. Goda	**منسق المقرر:** أ.د/ فاطمة النبوية السيد جوده

University	Mansoura
Faculty	Pharmacy
Department offering the course	Pharmaceutical Organic Chemistry
Program on which the course is given	Bachelor's Degree in Pharmacy - PharmD
Academic Level	Second level, First semester (2023/2024)
Date of course specification approval	10/9/2023

A- Basic Information: Course data:

Course Title	**Pharmaceutical Organic Chemistry-3**
Course Code	**PO 213**
Prerequisite	**--**
Teaching Hours/ week: Lecture:	**2**
Practical:	**1**
Total Credit Hours	**3**

B- Professional Information:

1- Course Aims:

This course enables the students to:

- Gain an understanding of the basic principles of heterocyclic organic chemistry such as the methods of preparation and the properties of the various five, six and seven membered rings.
- Have a good idea about heterocyclic-chemistry, organic reactions and carbohydrates to help in understanding of the next applied sciences like biochemistry and phytochemistry.
- Be capable to synthesize and prepare many heterocyclic organic compounds such as Benzazepines and Benzodiazepines.

2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements:

Domain 1: fundamental knowledge

Program Key element No.	Course Key element No.	Course Key Element
1.1.1	1.1.1.1	Identify the basic concepts of nomenclature of heterocyclic compounds.
	1.1.1.2	Recognize the physical and chemical properties of different heterocyclic rings and carbohydrates.
1.1.2	1.1.2.1	Apply pharmaceutical organic chemistry methods to design and synthesize different heterocyclic compounds
	1.1.2.2	Explain the organic reactions and chemical name of different heterocyclic rings and carbohydrates.
1.1.3	1.1.3.1	Utilize the principles of basic sciences to handle and identify different heterocyclic compounds.
	1.1.3.2	Discuss the importance of heterocyclic rings and carbohydrates in biological system and natural products.
1.1.7	1.1.7.1	Manipulate and discuss new synthetic routes that may be beneficial to pharmaceutical industry.

Domain 2: professional and ethical practice

Program Key element No.	Course Key element No.	Course Key Element
2.2.1	2.2.1.1	Design, explain the identification and preparation of different organic heterocycles from different sources.
2.5.3	2.5.3.1	Employ different scientific rules of research for synthesis of simple heterocyclic organic compounds.

Domain 4: personal practice

Program Key element No.	Course Key element No.	Course Key Element
4.1.1	4.1.1.1	Work effectively in a team and enhance time management abilities.

3- Course Contents

A-Theoretical part

Week No.	Topics	Hours
1	Heterocyclic Compounds: Nomenclature and classification	2
2	Five-membered heterocycles: Pyrrole and its derivatives	2
3	Five-membered heterocycles: Furan, thiophen and their derivatives	2
4	Fused five-membered heterocycles systems: Indole and isoindole	2
5	Five-membered heterocycles with two nitrogen atoms: Pyrazoles and imidazoles	2
6	Five-membered heterocycles with two different heteroatoms: Oxazoles and thiazoles Benzo-fused Diazoles: Benzimidazoles.	2
7	Six-membered heterocycles with one nitrogen atom: Pyridine and its derivatives	2
8	Fused Six-membered heterocycles I: Quinolines and their derivatives	2
9	Fused Six-membered heterocycles II: Isoquinolines and their derivatives	2
10	Six-membered rings with two nitrogen atoms: Pyridazines, pyrimidines, pyrazines Fused Benzodiazines: phthalazine, quinazoline, quinoxaline and their derivatives	2
11	Seven-Membered Rings: Benzazepines and Benzodiazepines Benzodiazepines: Synthesis, pharmaceutical use, examples of known drugs containing benzodiazepines (Self-learning topic)	2
12	Carbohydrates I: Definition, classification and stereochemistry	2
13	Carbohydrates II: Synthesis and reactions	2
14	Revision and quiz	--
15	Final Written and Oral Exam	--

B-Practical part

Week No.	Topics	Hours
1	Separation of solid binary mixtures of organic compounds I Oxalic acid + Naphthalene	1
2	Separation of solid binary mixtures of organic compounds II Sodium citrate + Anthracene and Citric acid + 2-naphthol	1
3	Separation of solid binary mixtures of organic compounds III Sod. salicylate + Phthalimide and Sod. benzoate + naphthalene	1
4	Separation of solid binary mixtures of organic compounds IV Sod. oxalate + 1-naphthol and Oxalic acid + Anthracene	1
5	**Scheme 1 and Practical Exam 1**	1
6	Synthesis of glucosazone	1
7	Synthesis of ethyl acetate	1
8	Midterm exam	-
9	Synthesis of nitrotoluene	1
10	Synthesis of nitronaphthalene	1
11	Synthesis of azo dye	1
12	Synthesis of iodoform	1
13	**Scheme 2 and revision**	1
14	**Practical Exam 2**	-

4- Teaching and Learning Methods:

Teaching and learning Methods		Weeks No.	Key elements to be addressed
4.1	**Advanced Lecture including brainstorming and group discussion**	**1-14**	**1.1.1.1 1.1.1.2 1.1.2.1 1.1.2.2 1.1.3.1 1.1.3.2 1.1.7.1**
4.2	**Hybrid Learning through My Mans platform**	**1-14**	
4.3	**Distance Learning:** - **Online learning through My Mans platform** - **Interactive discussion through My Mans**	**1-14**	

4.4	Practical Sessions using chemicals and laboratory equipment	1-14	2.2.1.1 2.2.3.1 2.5.3.1 4.1.1.1
4.5	Self-learning	11	4.1.1.1

5- Student Assessment:

Assessment Methods:

Assessment Methods	Key elements to be assessed
1- Periodical (Mid-term exam / Course work)	1.1.1.1, 1.1.1.2, 1.1.2.1, 1.1.2.2, 1.1.3.1, 1.1.3.2, 1.1.7.1, 4.1.1.1
2- Practical exam applying OSPE	2.2.1.1, 2.2.3.1, 2.5.3.1, 4.1.1.1
3- Written exam	1.1.1.1, 1.1.1.2, 1.1.2.1, 1.1.2.2, 1.1.3.1, 1.1.3.2, 1.1.7.1
4- Oral exam	1.1.1.1, 1.1.1.2, 1.1.2.1, 1.1.2.2, 1.1.3.1, 1.1.3.2, 1.1.7.1, 4.1.1.1

-Assessment schedule:

Assessment 1	Periodical (Mid-term/ Course work)	7-9th week
Assessment 2	Practical exam (OSPE)	14th week
Assessment 3	Written exam	15th week
Assessment 4	Oral exam	15th week

-Weighing of assessment:

1	Periodical (Mid-term/ Course work)	15%
2	Practical exam	25%
3	Written exam	50%
4	Oral exam	10%
Total		100%

6- Facilities required for teaching and learning.

- Classroom	Data show, computers, internet, molecular chemical models and animation files.
- Laboratory facilities	Chemicals, glass wares- and white board
- Library	Books for self-learning

7- List of References

No	Reference	Type
1.	Electronic book prepared by staff members	Course notes
2.	Alan R. Katritzky, Christopher A. Ramsden, John A. Joule, Viktor V. Zhdankin, *Handbook of Heterocyclic Chemistry* (3rd Edition "latest edition of this book"), Elsevier, 2010. ISBN 9780080958439.https://doi.org/10.1016/B978-0-08-095843-9.00001-X.	Essential Book
3.	Jacobi, P.A. *Introduction to Heterocyclic Chemistry.* 1st Edition, John Wiley & Sons, Hoboken, New Jersey, 2019.	Recommended Book
4.	John A. Joule, Keith Mills. Heterocyclic Chemistry, 5th Edition, Wiley-Blackwell, 2013.ISBN: 978-1-118-68164-0	Recommended Book
5.	FITTON, Alan Ogden; SMALLEY, Robert Kenneth. Practical heterocyclic chemistry. Elsevier, 2013.	Recommended Book
6.	Journal of Heterocyclic Chemistry https://www.sciencedirect.com/org/journal/journal-of-heterocyclic-chemistry/issues	Periodical
7.	http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg	Website

8-Matrix:

Matrix 1. Course contents and course key elements

A) Theoretical part:

Course contents	Course Key elements									
	Domain: 1							Domain: 2		Domain: 4
	1.1.1.1	1.1.1.2	1.1.2.1	1.1.2.2	1.1.3.1	1.1.3.2	1.1.7.1	2.2.1.1	2.5.3.1	4.1.1.1
Heterocyclic Compounds: Nomenclature and classification	√			√						
Five-membered heterocycles: Pyrrole and its derivatives	√	√	√	√	√	√	√			
Five-membered heterocycles: Furan, thiophen and their derivatives		√	√		√	√	√			
Fused five-membered heterocycles systems: Indole and isoindole		√	√		√	√	√			
Five-membered heterocycles with two nitrogen atoms: Pyrazoles and imidazoles		√	√		√	√	√	√		
Five-membered heterocycles with two different heteroatoms: Oxazoles and thiazoles		√	√		√	√	√		√	√

Course contents	Course Key elements									
	Domain: 1							Domain: 2		Domain: 4
	1.1.1.1	1.1.1.2	1.1.2.1	1.1.2.2	1.1.3.1	1.1.3.2	1.1.7.1	2.2.1.1	2.5.3.1	4.1.1.1
Benzo-fused Diazoles: Benzimidazoles.										
Six-membered heterocycles with one nitrogen atom: Pyridine and its derivatives	√	√	√	√	√	√	√			√
Fused Six-membered heterocycles I: Quinolines and their derivatives		√	√		√	√	√		√	√
Fused Six-membered heterocycles II: Isoquinolines and their derivatives		√	√		√	√	√			√
Six-membered rings with two nitrogen atoms: Pyridazines, pyrimidines, pyrazines **Fused Benzodiazines**: phthalazine, quinazoline, quinoxaline and their derivatives		√	√		√	√	√		√	√
Seven-Membered Rings: Benzazepines and Benzodiazepines Benzodiazepines: Synthesis, pharmaceutical use, examples of	√	√	√	√	√	√	√			√

Course contents	Course Key elements									
	Domain: 1							Domain: 2		Domain: 4
	1.1.1.1	1.1.1.2	1.1.2.1	1.1.2.2	1.1.3.1	1.1.3.2	1.1.7.1	2.2.1.1	2.5.3.1	4.1.1.1
known drugs containing benzodiazepines (**Self-learning topic**)										
Carbohydrates I: Definition, classification and stereochemistry		√				√	√			√
Carbohydrates II: Synthesis and reactions		√				√	√			√

B) Practical part:

Course contents	Course Key elements									
	Domain: 1							Domain: 2		Domain: 4
	1.1.1.1	1.1.1.2	1.1.2.1	1.1.2.2	1.1.3.1	1.1.3.2	1.1.7.1	2.2.1.1	2.5.3.1	4.1.1.1
Separation of solid binary mixtures of organic compounds I-IV								√		
Practical Exam 1										
Synthesis of glucosazone								√	√	√
Synthesis of ethyl acetate								√	√	√
Synthesis of nitrotoluene								√	√	√
Synthesis of nitronaphthalene								√	√	√
Synthesis of azo dye								√	√	√

Synthesis of iodoform								√	√	√
Practical Exam 2										

Matrix 2. Between course contents, methods of learning, and assessment

A) Theoretical part:

Course Contents	Teaching and Learning methods					Assessment methods			
	Advanced Lecture	Hybrid Learning	Distance Learning	Practical Sessions	Self-learning	Corse Work	Practical/ Tutorial	Written	Oral
Heterocyclic Compounds	√	√	√			√		√	√
Five-membered heterocycles	√	√	√			√		√	√
Five-membered heterocycles	√	√	√			√		√	√
Fused five-membered heterocycles systems	√	√	√			√		√	√
Five-membered heterocycles with two nitrogen atoms	√	√	√					√	√
Five-membered heterocycles with two different heteroatoms	√	√	√					√	√
Six-membered heterocycles with one nitrogen atom	√	√	√					√	√

Fused Six-membered heterocycles I	√	√	√					√	√
Fused Six-membered heterocycles II	√	√	√					√	√
Six-membered rings with two nitrogen atoms Fused Benzodiazines	√	√	√					√	√
Seven-Membered Rings: benzodiazepines (**Self-learning topic**)	√	√	√		√			√	√
Carbohydrates I and **II**	√	√	√					√	√

B) Practical part:

Course Contents	**Teaching and Learning methods**					**Assessment methods**			
	Advanced Lecture	**Hybrid Learning**	**Distance Learning**	**Practical Sessions**	**Self-learning**	**Corse Work**	**Practical/ Tutorial**	**Written**	**Oral**
Separation of solid binary mixtures of organic compounds I-IV		√		√			√		
Practical Exam 1				√			√		
Synthesis of glucosazone		√		√			√		
Synthesis of ethyl acetate		√		√			√		

Synthesis of nitrotoluene		√		√			√		
Synthesis of nitronaphthalene		√		√			√		
Synthesis of azo dye		√		√			√		
Synthesis of iodoform		√		√			√		
Practical Exam 2				√			√		

Course Coordinator	**Prof. Fatma E. Goda**	
Head of Department	**Prof. Shahenda M. El-Messery**	

Approval Date: 10/ 9/ 2023

بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

Course name: Scientific Writing	اسم **المقرر :** الكتابة العلمية
Academic Level: Second Level	**المستوى الأكاديمي :** الثاني
Scientific department: Pharmaceutical Organic Chemistry	**القسم العلمي :** الكيمياء العضوية الصيدلية
Head of Department: **Prof. Shahenda M. El-messery.**	**رئيس القسم :** ا.د/ شاهنده متولي المسيري
Course Coordinator: **Prof. Dr. Mona Ibrahem Awad Shaaban**	**منسق المقرر** : أ.د/ منى إبراهيم عوض شعبان

University	**Mansoura**
Faculty	**Pharmacy**
Department offering the course	**Pharmaceutical Organic Chemistry / Microbiology & Immunology.**
Department supervising the course	**Pharmaceutical Organic Chemistry.**
Program on which the course is given	**Bachelor's Degree in Pharmacy- Pharm D**
Academic Level	**Second Level, First Semester, 2023/2024**
Date of course specification approval	**10th September, 2023**

A. Basic Information: Course data:

Course Title	**Scientific Writing**
Course Code	**NP 212**
Prerequisite	**-**
Teaching credit Hours: Lecture	**1**
Practical	**0**
Total Credit Hours	**1**

B. Professional Information:

1. Course Aims:

This course enables the students to:

- Describe the principles of good scientific writing.
- Identify the basic structure of scientific articles and different types of research articles.
- Understand how to write a scientific paper, graduation project and research proposal.
- Recognize evaluation of literature and information sources.
- Describe the appropriate use of tables and figures in data presentation.

- Realize different methods of paraphrasing, common mistakes in scientific writing, different writing styles.

2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

Program k elements no.	Course k elements no.	Course k. elements
1.1.1	**1.1.1.1**	Explain the basics and principles of scientific writing.
1.1.2	**1.1.2.1**	Distinguish between different types of scientific publications.
	1.1.2.2	Utilize principles of scientific writing to write the graduation project and case report.
1.1.5	**1.1.5.1**	Choose the most appropriate search engine to search for a scientific topic.

Domain 2: professional and ethical practice

Program K. element no.	Course K. element no.	Course K. elements
2.2.2	**2.2.2.1**	Choose the most appropriate scientific characteristics and ethical requirements during writing reports, theses, essays and graduation projects.
	2.2.2.2	Recommend good writing practice and good seminars practice.
	2.2.2.3	Avoid plagiarism in scientific writing.

Domain 3: pharmaceutical care

Program K. element no.	Course K. element no.	Course K. elements
3.1.2	**3.1.2.1**	Utilize proper methods to present case study reports and heath related seminars.
3.1.3	**3.1.3.1**	Prepare health care brochures and flyers.

3.2.5	**3.2.5.1**	Communicate with other healthcare professionals to tailor appropriate healthcare plans.

Domain 4: personal practice

Program K. element no.	Course K. element no.	Course K. element
4.2.1	**4.2.1.1**	Communicate effectively in a scientific language to support patients, and health care regarding the studied topics.
4.3.2	**4.3.2.1**	Practice self-learning to improve professional skills

3- Course Contents

Week No.	Topics	Hours
1	Introduction to scientific writing.	1
2	Types of scientific publications.	1
3	Types of scientific publications.	1
4	Evaluation of literature and information resources	1
5	How to write graduation project	1
6	Characteristics and rules of scientific writing.	1
7	Oral presentation skills 1	1
8	Plagiarism 1	1
9	Appropriate use of Tables in data presentation 1	1
10	Appropriate use of Figures in data presentation 1	1
11	Graphics generation 1	1
12	References in scientific writing (self-learning)	1
13	Reference management in scientific writing (self-learning)	1
14	Revision and quiz	-
15	**Final written exam**	-

4- Teaching and Learning Methods:

	Teaching and Learning Methods	Week no	K. element to be Addressed
5.1	Computer aided learning: a. Lectures using Data show, PowerPoint presentations b. Distance learning ● Online learning through My mans "Mansoura University "as recorded – video lectures ● Interactive discussion through Moodle	1-14	**1.1.1.1**, **1.1.2.1** **1.1.2.2**, 1.1.5.1 **2.2.2.1**, **2.2.2.2** 2.2.2.3, 3.1.2.1, 3.1.3.1, 3.2.5.1, 4.2.1.1
5.2	Self-learning	12 &13	3.1.2.1, 4.3.2.1

5- Student Assessment:

a- Assessment Methods:

1- Periodical (Mid-term exam) / Course work	**1.1.1.1, 1.1.2.1, 1.1.2.2, 1.1.5.1, 2.2.2.1, 2.2.2.2, 2.2.2.3, 3.1.2.1, 3.1.3.1, 3.2.7.1, 4.2.1.1, 4.3.2.1.**
2-Practical exam	-
3-Written exam	**1.1.1.1, 1.1.2.1, 1.1.2.2, 1.1.5.1, 2.2.2.1, 2.2.2.2, 2.2.2.3.**
4-Oral	-

b- Assessment schedule

Assessment 1	Course work/activity	7-9th week
Assessment 2	Periodical (Mid-term exam)	7-9th week
Assessment 3	Course work/activity	7-9th week
Assessment 4	Written	15th week

c- Weighing of assessments

1	**Periodical (Mid-term exam)**	17%
2	**Course work/ activities**	8%
4	**Final-term written examination**	75%
Total		100%

6- Facilities required for teaching and learning

Classroom	Data show- Computers, whiteboard, Internet, Platform
Laboratory facilities	Computers, whiteboard, tools and glassware
Library	Books

7- List of References

No	Reference	Type

1.	Electronic Notebook prepared by staff members	Notebook
2.	Cargill, M., & O'Connor, P. (2021). *Writing scientific research articles: Strategy and steps*. John Wiley & Sons.	Book
3.	Lebrun, J. L., & Lebrun, J. (2021). Scientific writing 3.0: a reader and writer's guide. World Scientific.	
4.	Heard, S. B. (2022). *The scientist's guide to writing: how to write more easily and effectively throughout your scientific career*. Princeton University Press.	Book
5.	https://www.ekb.eg http://www.sciencedirect.com / http://www.pubmed.com http://www.plagiarism.org http://images.webofknowledge.com/images/help/WOS/A_abrvjt.html http://libguides.lib.uct.ac.za/c.php?g=182394&p=1201040 https://wilkes.libguides.com/c.php?g=191948&p=1266458 https://www.mendeley.com/guides/harvard-citation-guide	Websites

8-Matrix:

Matrix 1. Course contents and course key elements

A) Theoretical part:

Course contents / K. elements	Domain 1				Domain 2			Domain 3			Domain 4	
	1.1.1.1	1.1.2.1	1.1.2.2	1.1.5.1	2.2.2.1	2.2.2.2	2.2.2.3	3.1.2.1	3.1.3.1	3.2.5.1	4.2.1.1	4.3.2.1
Introduction to scientific writing.	√	√	√									
Types of scientific publications.		√	√					√	√			
Types of		√	√					√	√			

scientific publications.											
How to search for a scientific topic and how to get a scientific papers ?			√	√					√			√
How to write graduation project?	√		√		√	√						
Characteristics and rules of scientific writing.	√											
Oral presentation skills										√	√	
Plagiarism	√				√	√	√					
Appropriate use of Tables in data presentation	√							√	√	√		
Appropriate use of Figures in data presentation	√							√	√	√		
Graphics generation	√							√	√	√		

References in scientific writing (self-learning)	√				√	√	√	√	√	√	√	
Reference management in scientific writing (self-learning)	√				√	√	√	√	√	√		√

Matrix 2. Between course contents, methods of learning, and assessment

A) Theoretical part:

Course Contents	Teaching and Learning methods			Assessment methods	
	Lecture	Comp. aided learning	Self-learning	Corse Work	Written
Introduction to scientific writing.	√				√
Types of scientific publications.	√				√
Types of scientific publications.	√				√
How to search for a scientific topic and how to get a scientific papers ?	√	√	√	√	√
How to write graduation project?	√			√	√
Characteristics and rules of scientific writing.	√				√
Oral presentation skills	√	√	√	√	√
Plagiarism	√				√
Appropriate use of Tables in data presentation	√			√	√
Appropriate use of Figures in data presentation	√				√
Graphics generation	√	√	√	√	√
References in scientific writing	√	√	√		√
Reference management in scientific writing	√	√	√	√	√

Course Coordinator	Prof. Mona Ibrahem Shaaban	Mona Shaaban
Head of Department	Prof. Dr. Shahenda M. El-messery	

Date:10 /9 / 2023

(Pharm D - فارم د)

بكالوريوس الصيدلة

Course Specification

Academic year: 2023/2024

Course name: Pharmacognosy -2 (PG 213)	**اسم المقرر : عقاقير 2**
Academic Level: 2nd level	**المستوى الأكاديمي : الثانى**
Scientific department: Pharmacognosy	**القسم العلمي : العقاقير**
Head of Department: Prof. Mahmoud F. Elsebai	**رئيس القسم : ا.د/ محمود فهمي السباعي**
Course Coordinator: Prof. Mona G. Zaghloul	**منسق المقرر: ا.د/ منى جوده زغلول**

University	Mansoura
Faculty	Pharmacy
Department offering the course	Pharmacognosy
Program on which the course is given	Bachelor's Degree in Pharmacy - PharmD
Academic Level	Second level, First semester, 2023/2024
Date of course specification approval	… /9/2023

C- Basic Information: Course data:

Course Title	**Pharmacognosy -2**
Course Code	**PG 213**
Prerequisite	**Registration**
Teaching Hours/ week: Lecture:	**2**
Practical:	**1**
Total Credit Hours	**3**

D- Professional Information:

-Course Aims:

This course enables the students to:

- Study the drugs derived from medicinal fruits, herbs, subterranean organs, unorganized drugs and animal derived drugs as well as drugs derived from Algae and fungi.
- Have the knowledge and skills to differentiate between previous organs and identify the active constituents.
- Recognize adulterants, precautions of their medicinal uses, side effects, contraindications and their presence in pharmaceutical Egyptian markets.

2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements:

Domain 1: fundamental knowledge

Program Key element No.	Course Key element No.	Course Key Element
1.1.1	**1.1.1.1**	Outline general Macroscopical and microscopical characters of given medicinal fruits, and herbs, subterranean organs, unorganized drugs.
1.1.2	**1.1.2.1**	Memorize the geographical and botanical origin of the studied plants such as, fruits, and herbs, subterranean organs, unorganized drugs and animals.
1.1.3	**1.1.3.1**	Identify the principles of physical, chemical and microscopical characters in preparation of medicines and herbal mixtures from different plant organs as fruits, and herbs, subterranean organs, unorganized and animals drugs.
1.1.4	**1.1.4.1**	Recognize the main active constituents of the studied medicinal plant and animal parts as well as their medicinal uses.

Domain 2: professional and ethical practice

Program Key element No.	Course Key element No.	Course Key Element
2.2.1	**2.2.1.1**	Analyze and evaluate the natural pharmaceutical materials from different origins as fruits, herbs, subterranean organs, unorganized and animal drugs
2.2.2	**2.2.2.1**	Evaluate the incompatibilities and contraindications of a given medicinal items from plant and animal origin.
2.3.1	**2.3.1.1**	Utilize the appropriate methods to identify the active constituents of the target plants, their purity in pharmaceutical preparations as well as their handling and disposal.

Domain 4: personal practice

Program Key element No.	Course Key element No.	Course Key Element
4.1.1	**4.1.1.1**	**Work effectively in a team and demonstrate time management ability.**

4.2.1	**4.2.1.1**	**Communicate effectively in a scientific language by verbal and written means in the field of health care and medicinal plants regarding the studied topics.**
4.3.2	**4.3.2.1**	**Practice independent learning to promote continuous professional development.**

-Course Contents

Theoretical part

Week No.	Topics	Hours
1	Introduction of medicinal Fruits	2
2	Medicinal Fruits such as Umbelliferous fruits (Anise, Fennel, Coriander)	2
3	Medicinal Fruits such as Umbelliferous fruits (Ammi visnaga, Ammi majus)	2
4	Medicinal Fruits such as Capsicum, Colocynth fruit.	2
5	Introduction of medicinal herbs and some example of it such as (Ephedra, lobelia, cannabis)	2
6	Medicinal herbs such as (ergot, menthe, thymus, Hyoscyamus)	2
7	Introduction of subterranean drugs and some medicinal subterranean drugs such as Ginseng root and Liquorice root.	2
8	Medicinal subterranean drugs such as Rhubarb root & Rhizome, Ginger rhizome, Curcuma rhizome, Galangal rhizome and Jalap root.	2
9	Medicinal subterranean drugs such as Colchicum corm Senega root, Squill bulb, Gentiana, Valeriana and ……etc.	2
10	Introduction of unorganized drugs. Medicinal unorganized drug such as gums (gum tragacanth and gum Arabic).	2
11	Resin and resin combinations such as colophony, myrrh, asaphoteida dried extracts (gelatin and agar-agar). (Self learning)	2
12	Balsams (benzoine, perue…etc.), Dried latex (Opium), Dried juices (Aloe), Animal drugs such as Cochineal, Cantharides, Honey, Cod liver oil, Spermaceti and Musk.	2
13	unorganized drugs uses	2
14	**Revision and quiz**	2
15	**Final Written and Oral Exam**	--

Practical part

Week No.	Topics	Hours
1	Introduction of medicinal Fruits and Umbelliferous fruits.	1

2	Medicinal Fruits such as Umbelliferous fruits (Anise, Fennel)	1
3	Medicinal fruits such as Coriander, Ammi-visnaga, Ammi-majus	1
4	Medicinal Fruits such as Capsicum, Colocynth fruit.	1
5	Introduction of medicinal herbs and some examples of it such as (Ephedra, lobelia, ergot)	1
6	medicinal herbs such as (menthe, thymus, hyoscynmus)	1
7	Introduction of subterranean drugs and some medicinal subterranean drugs such as Liquorice root.	1
8	Midterm exam	-
9	Medicinal subterranean drugs such as Rhubarb root & Jalap root.	1
10	Medicinal subterranean drugs such as Ginger rhizome, Curcuma rhizome, & Galangal rhizome	1
11	Medicinal unorganized drug such as gums (gum tragacanth and gum Arabic)	1
12	Medicinal unorganized drug such as dried extracts (gelatin and agar-agar).	1
13	Resin and resin combinations such as colophony, myrrh, asaphoteida	1
14	**Practical exam**	--

-Teaching and Learning Methods:

No	Teaching and learning Methods	Weeks No.	Key elements to be addressed
4.1	Advanced lecture	1-14	(1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.3.1), (2.2.1.1), (2.2.2.1), (2.3.1.1), (4.1.1.1)
4.2	Distance learning: On line learning through My mans "Mansoura university "	1-14	(1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.3.1), (2.2.1.1), (2.2.2.1), (2.3.1.1)
4.3	Practical works and tutorials	1-14	(1.1.1.1), (1.1.2.1), (2.2.1.1), (2.2.2.1), (2.3.1.1), (4.1.1.1), (4.2.1.1)
4.4	Self-learning	11	(4.1.1.1), (4.3.2.1), (4.2.1.1)

-Student Assessment:

-Assessment Methods:

Assessment Methods	Key elements to be assessed
1- Periodical (Mid-term exam / Course work)	(1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.3.1), (2.2.1.1), (2.2.2.1), (2.3.1.1), (4.1.1.1)
2- Practical exam using OSPE	(1.1.1.1), (1.1.2.1), (2.2.1.1), (2.2.2.1), (2.3.1.1), (4.1.1.1), (4.2.1.1)
3- Written exam	(1.1.1.1), (1.1.2.1), (1.1.4.1), (1.1.3.1)
4- Oral exam	(1.1.1.1), (1.1.2.1), (2.2.1.1), (2.2.2.1), (2.3.1.1), (4.1.1.1), (4.2.1.1)

-Assessment schedule:

Assessment 1	Periodical (Mid-term/ Course work)	7-9th week
Assessment 2	Practical exam (OSPE)	14th week
Assessment 3	Written exam	15th week
Assessment 4	Oral exam	15th week

-Weighing of assessment:

1	**Periodical (Mid-term/ Course work)**	**15%**
2	**Practical exam**	**25%**
3	**Written exam**	**50%**
4	**Oral exam**	**10%**
Total		**100%**

8- Facilities required for teaching and learning.

- Classroom	Data show- Computers, Internet.
- Laboratory facilities	Microscopes- chemicals- glass wares- white board
- Library	Books

List of References

No	Reference	Type
1.	Electronic book prepared by staff members.	Course notes
2.	Recorded videos prepared by stuff members	Videos on platform
3.	Evans, W.C "Trease and Evans". "Pharmacognosy" 16th edition, Saunders Ltd, 2019	Recommended Book
4.	- Jackson, B.P. and Snowdon, D.W. "Powdered vegetable drugs" 14th. Ed, W.B. Saunders Company Ltd., London, 1996.	Recommended Book
5.	- Tease and Evens, "General Pharmacognosy", saunders, London, New York, Sydney, Toronto, 2020.	Recommended Book
6.	http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg http://www.thebotanyplace.com	Website

8-Matrix:

Matrix 1. Course contents and course key elements

A) Theoretical part:

Course contents	Course Key elements									
	Domain: 1				Domain: 2			Domain: 4		
	1.1.1.1	1.1.2.1	1.1.3.1	1.1.4.1	2.2.1.1	2.2.2.1	2.3.4.1	4.1.1.1	4.2.1.1	4.3.2.1
Introduction of medicinal Fruits		√								
Medicinal Fruits such as Umbelliferous fruits (Anise, Fennel, Coriander)	√		√	√						
Medicinal Fruits such as Umbelliferous fruits (Ammi visnaga, Ammi majus)		√	√							
Medicinal Fruits such as Capsicum, Colocynth fruit.		√								
Introduction of medicinal herbs and some example of it such as (Ephedra, lobelia, cannabis)	√		√	√	√	√	√	√	√	
Medicinal herbs such as (ergot, menthe, thymus, Hyoscyamus)	√		√	√	√	√		√	√	
Introduction of subterranean drugs and some medicinal subterranean drugs such as Ginseng root and Liquorice root.		√	√	√	√	√				
Medicinal subterranean drugs such as Rhubarb root & Rhizome, Ginger rhizome, Curcuma rhizome, Galangal rhizome and Jalap root.		√								√
Medicinal subterranean drugs such as Colchicum corm Senega root, Squill bulb, Gentiana, Valeriana and …..……etc.	√		√	√	√	√	√	√	√	

Introduction of unorganized drugs. Medicinal unorganized drug such as gums (gum tragacanth and gum Arabic).		√								√
Resin and resin combinations such as colophony, myrrh, asaphoteida dried extracts (gelatin and agar-agar). (Self learning)	√		√	√	√	√	√	√	√	
Balsams (benzoine, perue…etc.), Dried latex (Opium), Dried juices (Aloe), Animal drugs such as Cochineal, Cantharides, Honey, Cod liver oil, Spermaceti and Musk.		√	√		√	√		√		√
unorganized drugs uses		√								√

B) Practical part:

Course contents	Course Key elements									
	Domain: 1				Domain: 2			Domain: 4		
	1.1.1.1	1.1.2.1	1.1.3.1	1.1.4.1	2.2.1.1	2.2.2.1	2.3.4.1	4.1.1.1	4.2.1.1	4.3.2.1
Introduction of medicinal Fruits and Umbelliferous fruits.		√								
Medicinal Fruits such as Umbelliferous fruits (Anise, Fennel, Coriander, Ammi visnaga, Ammi majus)	√		√	√						
Medicinal Fruits such as Capsicum, Colocynth fruit.		√	√							
Introduction of medicinal herbs and some examples of it such as (Ephedra, lobelia, ergot)		√								
medicinal herbs such as (menthe, thymus, hyoscynmus)	√		√	√	√	√	√	√	√	

Introduction of subterranean drugs and some medicinal subterranean drugs such as Liquorice root.	√		√	√	√	√		√	√	
Medicinal subterranean drugs such as Rhubarb root & Jalap root.					√					
Medicinal subterranean drugs such as Ginger rhizome, Curcuma rhizome, & Galangal rhizome		√								√
Medicinal unorganized drug such as gums (gum tragacanth and gum Arabic)	√		√	√	√	√	√	√	√	
Medicinal unorganized drug such as dried extracts (gelatin and agar-agar).		√								√
Resin and resin combinations such as colophony, myrrh, asaphoteida.	√		√	√	√	√	√	√	√	

9-Matrix 2. Between course contents, methods of learning, and assessment

A) Theoretical part:

Course Contents	Teaching and Learning methods					Assessment methods			
	Lecture	Hybrid leaning	Comp. aided learning	Lab sessions	Self-learning	Corse Work	Practical/ Tutorial	Written	Oral
Introduction of medicinal Fruits	√	√	√			√		√	√
Medicinal Fruits such as Umbelliferous fruits (Anise, Fennel, Coriander)	√	√	√			√		√	√
Medicinal Fruits such as Umbelliferous fruits (Ammi visnaga, Ammi majus)	√	√	√			√		√	√
Medicinal Fruits such as Capsicum, Colocynth fruit.	√	√	√			√		√	√

Introduction of medicinal herbs and some example of it such as (Ephedra, lobelia, cannabis)	√	√	√					√	√
Medicinal herbs such as (ergot, menthe, thymus, Hyoscyamus)	√	√	√					√	√
Introduction of subterranean drugs and some medicinal subterranean drugs such as Ginseng root and Liquorice root.	√	√	√					√	√
Medicinal subterranean drugs such as Rhubarb root & Rhizome, Ginger rhizome, Curcuma rhizome, Galangal rhizome and Jalap root.	√	√	√					√	√
Medicinal subterranean drugs such as Colchicum corm Senega root, Squill bulb, Gentiana, Valeriana and …..……etc.	√	√	√					√	√
Introduction of unorganized drugs. Medicinal unorganized drug such as gums (gum tragacanth and gum Arabic).	√	√	√					√	√
Resin and resin combinations such as colophony, myrrh, asaphoteida dried extracts (gelatin and agar-agar). (Self learning)	√	√	√		√			√	√
Balsams (benzoine, perue…etc.), Dried latex (Opium), Dried juices (Aloe), Animal drugs such as Cochineal, Cantharides, Honey, Cod liver oil, Spermaceti and Musk.	√	√	√					√	√
unorganized drugs uses	√	√	√					√	√

B) Practical part:

Course Contents	Teaching and Learning methods					Assessment methods			
	Lecture	Hybrid learning	Comp. aided learning	Lab sessions	Self-learning	Corse Work	Practical/Tutorial	Written	Oral
Introduction of medicinal Fruits and Umbelliferous fruits.		√	√	√		√	√		√
Medicinal Fruits such as Umbelliferous fruits (Anise, Fennel, Coriander, Ammi visnaga, Ammi majus)		√	√	√		√	√		√
Medicinal Fruits such as Capsicum, Colocynth fruit.		√	√	√		√	√		√
Introduction of medicinal herbs and some examples of it such as (Ephedra, lobelia, ergot)		√	√	√		√	√		√
medicinal herbs such as (menthe, thymus, hyoscynmus)		√	√	√		√	√		√
Introduction of subterranean drugs and some medicinal subterranean drugs such as Liquorice root.		√	√	√		√	√		√
Medicinal subterranean drugs such as Rhubarb root & Jalap root.		√	√	√		√	√		√
Medicinal subterranean drugs such as Ginger rhizome, Curcuma rhizome, & Galangal rhizome		√	√	√		√	√		√
Medicinal unorganized drug such as gums (gum tragacanth and gum Arabic)		√	√	√		√	√		√
Medicinal unorganized drug such as dried		√	√	√		√	√		√

extracts (gelatin and agar-agar).									
Resin and resin combinations such as colophony, myrrh, asaphoteida.		√	√	√		√	√		√

Course Coordinator	Prof. Mona G. Zaghloul
Head of Department	Prof. Mahmoud F. Elsebai

Approval Date: …/9/2023

بكالوريوس الصيدلة (فارم د - Pharm D)

Course Specification

Academic year: 2023/2024

Course name: Physiology	**اسم المقرر: علم وظائف الاعضاء**
Academic Level: 2	**المستوى الأكاديمي: 2**
Scientific department: Pharmacology & Toxicology	**القسم العلمي: الأدوية والسموم**
Head of Department: Prof Manar A Nader	**رئيس القسم: أ.د/ منار احمد نادر**
Course Coordinator: Prof Dina S El-Agamy	**منسق المقرر: أ.د/ دينا سعد العجمى**

University	Mansoura
Faculty	Pharmacy
Department offering the course	Pharmacology & Toxicology
Program on which the course is given	Bachelor's Degree in Pharmacy - PharmD
Academic Level	Second level, First semester, 2023/2024
Date of course specification approval	18/9/2023

-Basic Information: Course data:

Course Title	Physiology
Course Code	PH-211
Prerequisite	-
Teaching Hours/ week: Lecture:	2
Practical:	1
Total Credit Hours	3 (Credit H)

-Professional Information:

-Course Aims:

This course enables the students to:

1 Provide knowledge and understanding of the basic functions of the body systems.

2 Introduce concepts of cellular, tissue and system hemostasis.

3 Provide comprehensive coverage on the integration of the different body systems to maintain body functions.

2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements:

Domain 1: fundamental knowledge

Program Key element No.	Course Key element No.	Course Key Element
(1.1.1)	**1.1.1.1**	**Describe** information on pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences
(1.1.4)	**1.1.4.1**	**Recognize** drugs' mechanism of action, therapeutic effects and assess their suitability, effectiveness, and safety in individuals and populations, using knowledge from fundamental sciences.

Domain 2: professional and ethical practice

Program Key element No.	Course Key element No.	Course Key Element
(2.1.3)	**2.1.3.1**	**Assess** suitable professional limits and take responsibility and accountability within healthcare team.

Domain 3: pharmaceutical care

Program Key element No.	Course Key element No.	Course Key Element
(3.1.1)	**3.1.1.1**	**Handle** a dosage schedule for a patient based on the physiological, genetic, biochemical and immunological changes taken by disease or concomitant drug therapy.

Domain 4: personal practice

Program Key element No.	Course Key element No.	Course Key Element
(4.1.1)	**4.1.1.1**	**Record** decision-making activities with pharmacy team members and non-pharmacy team members and use effective time management skills.
(4.1.2)	**4.1.2.1**	**Supply** the creation of knowledge or practices in the field of pharmacy and participate independently and collaboratively in the delivery of health services.
(4.2.1)	**4.2.1.1**	**Practice** clear language, pace, tone and non-verbal communication and writing skills when dealing with patients, other health team and communities.

-Course Contents

-Theoretical part

Week No.	Topics	Hours
1	Introduction to Physiology	2
2	Physiology of the nervous system	2
3	Physiology of the nervous system	2
4	Physiology of the cardiovascular system	2
5	Physiology of the cardiovascular system	2
6	Physiology of digestive system	2
7	Physiology of digestive system	2
8	Physiology of respiratory system	2
9	Physiology of the excretory system	2
10	Physiology of the endocrine system	2
11	Physiology of the endocrine system	2
12	Physiology of the immune system	2
13	Physiology of the immune system-Self learning	2
14	Revision and quiz	--
15	Start of Final written and oral exam	--

A) Practical part

Week No.	Topics	Hours
1	Physiology of cell membrane	1
2	Nutrient assessment, BMR, and body composition	1
3	Autonomic innervation of skeletal muscle (Physiology of skeletal muscle)	1
4	Autonomic innervation of smooth muscles (Physiology of smooth muscle)	1
5	Autonomic innervation of the eye	1
6	Human electro-cardiography (ECG)	1
7	Analysis of human blood pressure	1
8	Midterm exam	-
9	Blood clotting and blood groups	1
10	Erythrocyte sedimentation rate (ESR)	1

11	**osmotic properties of red cells & Blood hemolysis**	1
12	**Measurement of clinical diagnostic tool**	1
13	**Pulmonary function tests**	1
14	**Practical exam**	--

9- Teaching and Learning Methods:

Teaching and learning Methods		Weeks No.	Key elements to be addressed
4.1	**Advanced lectures:** • Lectures using Data show, power Point presentations • Brain storming • Group discussion	1-14	1.1.1.1, 1.4.4.1, 2.1.3.1, 3.1.1.1, 4.2.1.1
4.2	Hybrid learning: Hybrid Online learning through my mans "Mansoura university "as recorded – video lectures	1-14	1.1.1.1, 1.4.4.1, 2.1.3.1, 3.1.1.1, 4.3.2.1
4.3	Self-learning.	13	1.1.1.1., 2.1.3.1, 3.1.1.1, 4.1.1.1, 4.1.2.1, 4.2.1.1, 4.3.2.1
4.4	Practical session using laboratory equipment and/ or tutorials.	1-14	1.1.1.1., 1.4.4.1, 2.1.3.1, 3.1.1.1, 4.1.1.1, 4.1.2.1, 4.2.1.1
4.5	**collaborative learning: research Project**	10-12	1.4.4.1, 2.1.3.1, 3.1.1.1, 4.1.1.1, 4.1.2.1, 4.2.1.1

10- Student Assessment:

-Assessment Methods:

Assessment Methods	Key elements to be assessed
1- Periodical (Mid-term exam / Course work)	1.1.1.1, 1.4.4.1, 2.1.3.1, 3.1.1.1
2- Practical exam	1.1.1.1, 1.4.4.1, 2.1.3.1, 3.1.1.1, 4.1.1.1, 4.1.2.1, 4.2.1.1
3- Written exam	1.1.1.1, 1.4.4.1, 2.1.3.1, 3.1.1.1, 4.1.1.1, 4.1.2.1, 4.2.1.1
4- Oral exam	1.1.1.1, 4.1.1.1, 4.1.2.1, 4.2.1.1

-Assessment schedule:

Assessment 1	Periodical (Mid-term/ Course work)	7-9th week
Assessment 2	Practical exam (OSPE)	14th week

Assessment 3	Written exam	15th week
Assessment 4	Oral exam	15th week

-Weighing of assessment:

1	Periodical (Mid-term/ Course work)	15%
2	Practical exam	25%
3	Written exam	50%
4	Oral exam	10%
Total		100%

11- Facilities required for teaching and learning.

-	Classroom	Data show- Computers, Internet. ……..
-	Laboratory facilities	Animals, equipment, tools …….
-	Library	Updated books- Internet – Free access to EKB

12- List of References

No	Reference	Type
1.	Lectures Handout	Course notes
2.	• Physiology; Linda S. Costanzo. Elsevier, 7th edition, 2021. • Guyton and Hall Textbook of Medical Physiology; John E. Hall. Elsevier, 13th edition, 2015.	Essential Book
3.	Color atlas of physiology, Despopuolos A. and Selbernagel S. Thieme publisher, 5th edition, 2003.	Recommended Book
4.	http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg	Recommended Websites

8-Matrix:

Matrix 1. Course contents and course key elements

A) Theoretical part:

Course contents	Course Key elements								
	Domain: 1		Domain: 2		Domain: 3		Domain: 4		
	1.1.1.1	1.1.4.1	2.1.3.1		3.1.1.1		4.1.1.1	4.1.1.2	4.2.1.1
Introduction to Physiology	√	√							
Physiology of the nervous system	√	√			√				
Physiology of the nervous system	√	√			√				
Physiology of the cardiovascular system	√	√			√				
Physiology of the cardiovascular system	√	√			√				
Physiology of digestive system	√	√	√		√				
Physiology of digestive system – Midterm Exam	√	√	√		√			√	√
Physiology of respiratory system	√	√			√			√	√
Physiology of the excretory system	√	√			√			√	√
Physiology of the endocrine system	√	√			√				√
Physiology of the endocrine system	√	√			√				√
Physiology of the immune system	√	√	√		√				√
Physiology of the immune system-Self learning	√	√	√		√				√

B) Practical part:

Course contents	Course Key elements								
	Domain: 1		Domain: 2		Domain: 3		Domain: 4		
	1.1.1.1	1.1.4.1	2.1.3.1		3.1.1.1		4.1.1.1	4.1.1.2	4.2.1.1
Physiology of cell membrane	√	√	√		√				
Nutrient assessment, BMR, and body composition	√	√	√		√				
Autonomic innervation of skeletal muscle (Physiology of skeletal muscle)	√	√	√		√		√	√	√
Autonomic innervation of smooth muscles (Physiology of smooth muscle)	√	√	√		√		√	√	√
Autonomic innervation of the eye	√	√	√		√		√	√	√
Human electro-cardiography (ECG)	√	√	√		√		√	√	√
Analysis of human blood pressure	√	√	√		√		√	√	√
Blood clotting and blood groups	√	√			√		√	√	√
Erythrocyte sedimentation rate (ESR), osmotic properties of red cells & Blood hemolysis	√	√			√		√	√	√
Measurement of clinical diagnostic tool	√	√			√		√	√	√
Pulmonary function tests	√	√			√		√	√	√

Matrix 2. Between course contents, methods of learning, and assessment
A) Theoretical part:

Course Contents	Teaching and Learning methods				Assessment methods			
	Advanced Lecture	Hybrid Online leaning	Self-learning	Collaborative learning		Course Work (Midterm Exam)	Written Exam	Oral Exam
Introduction to Physiology	√	√				√	√	√
Physiology of the nervous system	√	√				√	√	√
Physiology of the nervous system	√	√				√	√	√
Physiology of the cardiovascular system	√	√				√	√	√
Physiology of the cardiovascular system	√	√					√	√
Physiology of digestive system	√	√					√	√
Physiology of digestive system – Midterm Exam	√	√					√	√
Physiology of respiratory system	√	√					√	√
Physiology of the excretory system	√	√					√	√
Physiology of the endocrine system	√	√		√			√	√
Physiology of the endocrine system	√	√		√			√	√
Physiology of the immune system	√	√		√			√	√
Physiology of the immune system-Self learning		√	√				√	√

B) Practical part:

Course Contents	Teaching and Learning methods			Assessment methods		
	Practical Session	Hybrid learning	Collaborative learning		Course Work	Practical Exam
Physiology of cell membrane	√	√				√
Nutrient assessment, BMR, and body composition	√	√	√		√	√
Autonomic innervation of skeletal muscle (Physiology of skeletal muscle)	√	√	√		√	√
Autonomic innervation of smooth muscles (Physiology of smooth muscle)	√	√	√		√	√
Autonomic innervation of the eye	√	√	√		√	√
Human electro-cardiography (ECG)	√	√	√		√	√
Analysis of human blood pressure	√	√	√		√	√
Blood clotting and blood groups	√	√	√		√	√
Erythrocyte sedimentation rate (ESR), osmotic properties of red cells & Blood hemolysis	√	√	√		√	√
Measurement of clinical diagnostic tool	√	√	√		√	√
Pulmonary function tests	√	√	√		√	√

Course Coordinator	**Prof. Dina S El-Agamy** **Dinaagamy**
Head of Department	**Prof. Manar A. Nader** 

Approval Date: 18/9/2023

بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

Course name: Pharmaceutics I	**اسم المقرر: صيدلانيات 1**
Academic Level: Level 2	**المستوى الأكاديمي: الثاني**
Scientific department: Pharmaceutics	**القسم العلمي: الصيدلانيات**
Head of Department: **Prof. Dr. Irhan Ibrahim Abu Hashim**	**رئيس القسم:** **أ.د/ إرهان إبراهيم أبوهاشم**
Course Coordinator: **Prof. Dr. Osama Abd El-Azeem Soliman**	**منسق المقرر:** **ا د / اسامه عبد العظيم سليمان**

Basic Information: Course data:

University	Mansoura
Faculty	Pharmacy
Department offering the course	Pharmaceutics
Department supervising the course	Pharmaceutics
Program on which the course is given	**Bachelor in Pharmacy -Pharm D by law**
Academic Level	Second level, First semester, 2023-2024
Date of course specification approval	**September 2023**

Course Title	**Pharmaceutics I**
Course Code	**PT 213**
Prerequisite	**Physical pharmacy**
Teaching Hours: Lecture	**2**
Practical	**1**
Total Credit Hours	**3 (Credit H)**

1- Course Aims:

- Orienting the students to basic principles of pharmaceutical calculations, formulations, incompatibilities, compounding, preservation, and storage of different liquid dosage forms.
- Recognizing different methods used to prepare drugs in different dosage forms as oral preparations.
- Knowing the different types of liquid preparations and their routes of administration.

2- Course Learning Outcomes

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

Program K. element no.	Course K. element no.	Course K. element
1.1.1	**1.1.1.1**	List the basic principles of liquid formulations as drug delivery systems.
1.1.3	**1.1.3.1**	Interpret the different liquid dosage forms as; solutions, colloids, suspensions and emulsions.
1.1.9	**1.1.9.1**	Solve and execute pharmaceutical and compounding calculations required to compound different liquid preparations.

Domain 2: professional and ethical practice

Program K. element no.	Course K. element no.	Course K. element
2.2.4	**2.2.4.1**	Specify basic principles for calculations and assessment procedures of all liquid dosage forms.
2.2.5	**2.2.5.1**	Prepare and compound the different liquid dosage forms as; solutions, colloids, suspensions and emulsions.

Domain 4: personal practice

Program K. element no.	Course K. element no.	Course K. element
4.1.2	**4.1.2.1**	Identify problems and participate with other team members and apply effective time management skills.
4.3.2	**4.3.2.1**	Practice self-learning to improve professional skills

2- Course Contents

Week No.	Theoretical Topics	Credit Hours
1	Pharmaceutical calculations Systems of Pharmaceutical Measurement	2
2	Pharmaceutical calculations Roman Numerals	2
3	Pharmaceutical Solutions Syrup, elixir	2
4	Pharmaceutical Solutions Solutions used in mouth , throat, and body cavities	2
5	Pharmaceutical suspensions Definition, stability	2
6	Pharmaceutical suspensions Preparation and characterization	2
7	Incompatibilities occurring during dispensing Physical / pharmaceutical incompatibility	2
8	Incompatibilities occurring during dispensing Chemical and Therapeutic incompatibilities	2
9	Emulsions Definition and types	2
10	Emulsions Preparation and applications	2
11	Colloids Definition and separation	2
12	Colloids Types and properties of colloidal systems	2
13	Prescription and Dose calculation (self-learning)	2
14	Revision and quiz	2
15	Final Written and Oral Exam	--
Week No.	**Practical topics**	**Credit hours**
1	General Laboratory Instructions	1
2	Pharmaceutical calculations	1
3	Preparation of Simple Mixtures (Internal solutions)	1
4	Preparation of external solutions	1

5	Preparation of non-aqueous solutions (elixir)	1
6	Preparation of suspension	1
7	Suspension containing Diffusible Solids	1
8	Midterm exam	-
9	Suspension Containing Indiffusible Solids	1
10	Preparation of Emulsion (Castor Oil Emulsion)	1
11	Preparation of Emulsion (Liquid Paraffin Emulsion)	1
12	Medicated emulsion	1
13	Medicated emulsion 2 & Revision	1
14	Practical exam	----

-aching and Learning Methods:

Teaching and learning Methods		Weeks No.	K. elements to be addressed
4.1	**Computer aided learning:** **a. Lectures using Data show, power Point presentations** **b. Hybride learning** • **Online learning through my mans "Mansoura university" as recorded video lectures** • **Interactive discussion through My Mans.**	**1-14**	**1.1.1.1, 1.1.3.1, 1.1.9.1, 2.2.4.1, 2.2.5.1, 4.1.2.1,**
4.2	**Practical session using chemicals and laboratory equipment**	**1-14**	**1.1.1.1, 1.1.3.1, 1.1.9.1, 2.2.4.1, 2.2.5.1**
4.3	**Self-learning, Class Activity Discussion**	**13**	**1.1.1.1, 1.1.3.1, 1.1.9.1, 4.1.2.1, 4.3.2.1**
4.4	**Advanced lecture (Brainstorming) / problem solving**	**1-14**	**1.1.1.1, 1.1.3.1, 1.1.9.1, 2.2.4.1**

5- Student Assessment:

a- Assessment Methods:

Assessment Methods	Key elements to be assessed
1-Periodical (Mid-term exam / Course work)	1.1.1.1, 1.1.3.1, 1.1.9.1, 4.1.2.1
2-Practical exam using OSPE	2.2.4.1, 2.2.5.1 4.1.2.1, 4.3.2.1
3- Written exam	1.1.1.1, 1.1.3.1, 1.1.9.1, 2.2.4.1, 2.2.5.1
4- Oral exam	1.1.1.1, 1.1.3.1, 1.1.9.1, 4.1.2.1, 4.3.2.1

b- Assessment schedule

Assessment 1	Mid-term/Course work	7-9 th week
Assessment 2	Practical, OSPE	14th week
Assessment 3	Written exam	15th week
Assessment 4	Oral exam	15th week

c- Weighing of assessments

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

6- Facilities required for teaching and learning

Classroom	Data show- Computers, Internet, Platform
Laboratory facilities	Water baths, glassware, chemicals, electronic balance
Library	Books and Pharmacopoeia

7- List of References

No	Reference	Type
1.	Electronic book “Pharmaceutic-1” prepared by staff members.	Course notes
2.	"Aulton’s Pharmaceutics: The design and manufacture of medicines" 6th Ed., Michael E. Aulton, Kevin M.G. Taylor, (2021).	Essential Book

3.	"Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems" 10th Ed., Wolters Kluwer, Loyd Allen, Howard C. Ansel, Lippincott Williams and Wilkins, Philadelphia, (2013).	Essential Book
4.	"Remington's: The science and practice of pharmacy" 22nd Ed., Pharmaceutical Press, Lippincott Williams and Wilkins, Philadelphia, (2012).	Essential Book
5	http://www.sciencedirect.com http://www.google.com, http://www.pubmed.com https://www.ekb.eg	Website

8- Matrix

Matrix 1. Course content and course key elements

A. Theoretical part

Course contents	**Outcomes Domains / Key elements**							
	Domain 1				**Domain 2**		**Domain 4**	
	1.1.1.1	**1.1.3.1**	**1.1.9.1**		**2.1.4.1**	**2.2.5.1**	**4.1.2.1**	**4.3.2.1**
Pharmaceutical calculations Systems of Pharmaceutical Measurement			√		√			
Pharmaceutical calculations Roman Numerals			√		√			
Pharmaceutical Solutions Syrup, elixir	√	√				√		
Pharmaceutical Solutions Solutions used in mouth , throat, and body cavities	√	√				√		
Pharmaceutical suspensions Definition, stability	√	√	√		√	√		
Pharmaceutical suspensions Preparation and characterization	√	√	√		√	√		

Incompatibilities occurring during dispensing Physical / pharmaceutical incompatibility	√	√							
Incompatibilities occurring during dispensing Chemical and Therapeutic incompatibilities	√	√							
Emulsions Definition and types	√	√	√		√	√			
Emulsions Preparation and applications	√	√	√		√	√			
Colloids Definition and separation	√	√							
Colloids Types and properties of colloidal systems	√	√							
Prescription and Dose calculation (self-learning)			√		√			√	√

B. Practical part

Course contents	Outcomes Domains / Key elements							
	Domain 1				Domain 2			Domain 4
	1.1.1.1	1.1.3.1	1.1.9.1		2.1.4.1	2.2.5.1		4.1.2.1	4.3.2.1
General Laboratory Instructions					√	√			
Pharmaceutical calculations			√		√	√			
Preparation of Simple Mixtures (Internal solutions)	√	√	√		√	√		√	
Preparation of external solutions	√	√	√		√	√		√	

Preparation of non-aqueous solutions (elixir)	√	√	√		√	√		√	
Preparation of suspension	√	√	√		√	√		√	
Suspension containing Diffusible Solids	√	√	√		√	√		√	
Suspension Containing Indiffusible Solids	√	√	√		√	√		√	
Preparation of Emulsion (Castor Oil Emulsion)	√	√	√		√	√		√	
Preparation of Emulsion (Liquid Paraffin Emulsion)	√	√	√		√	√		√	
Medicated emulsion & Revision	√	√	√		√	√		√	

Matrix 2. Between course contents, methods of learning and assessment

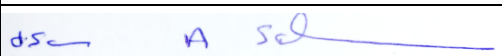
Theoretical course contents	Teaching and Learning methods				Assessment methods		
	Advanced Lecture	Hybrid leaning	Problem solving	Self-learning	Corse Work midterm)	Written	Oral
Pharmaceutical calculations Systems of Pharmaceutical Measurement	√	√	√		√	√	√
Pharmaceutical calculations Roman Numerals	√	√	√		√	√	√
Pharmaceutical Solutions Syrup, elixir	√	√	√		√	√	√
Pharmaceutical Solutions Solutions used in mouth , throat, and body cavities	√	√	√		√	√	√
Pharmaceutical suspensions Definition, stability	√	√	√		√	√	√
Pharmaceutical suspensions Preparation and characterization	√	√	√		√	√	√
Incompatibilities occurring during dispensing Physical / pharmaceutical incompatibility	√	√	√		√	√	√

Incompatibilities occurring during dispensing Chemical and Therapeutic incompatibilities	√	√	√		√	√	√
Emulsions Definition and types	√	√			√	√	√
Emulsions Preparation and applications	√	√	√		√	√	√
Colloids Definition and separation	√	√	√		√	√	√
Colloids Types and properties of colloidal systems	√	√	√		√	√	√
Prescription types Dose calculation (self-learning)	√	√	√	√	√		

A. Theoretical part

B- Practical part

Practical course contents	**Teaching and Learning Methods**				**Assessment methods**	
	Advanced Lecture	**Hybrid learning**	**Lab sessions**	**Problem solving**	**Course Work**	**Practical**
General Laboratory Instructions	√	√	√		√	√
Pharmaceutical calculations	√	√	√	√	√	√
Preparation of Simple Mixtures (Internal solutions)	√	√	√	√	√	√
Preparation of external solutions	√	√	√	√	√	√
Preparation of non-aqueous solutions (elixir)	√	√	√	√	√	√
Preparation of suspension	√	√	√	√	√	√
Suspension containing Diffusible Solids	√	√	√	√	√	√
Suspension Containing Indiffusible Solids	√	√	√	√	√	√
Preparation of Emulsion (Castor Oil Emulsion)	√	√	√	√	√	√
Preparation of Emulsion (Liquid Paraffin Emulsion)	√	√	√	√	√	√
Medicated emulsion & Revision	√	√	√	√	√	√

Course Coordinator	**Prof. Dr. Osama Abd El-Azeem Soliman**
	
Head of Department	**Prof. Dr. Irhan Ibrahim Abu Hashim**
	

Approval Date: 20 /9/ 2023

بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

Course name: Biochemistry-1	**اسم المقرر : الكيمياء الحيوية-1**
Academic Level: level two	**الأكاديمي : المستوى الثاني المستوى**
Scientific department: Biochemistry Dept.	**القسم العلمي : الكيمياء الحيوية**
Head of Department: Dr. Noha M.H. Abdel-Rahman	**رئيس القسم : د/ نهى منصور حسن عبدالرحمن**
Course Coordinator: Dr. Noha M.H. Abdel-Rahman	**منسق المقرر: د/ نهى منصور حسن عبدالرحمن**

University	**Mansoura**
Faculty	**Pharmacy**
Department offering the course	**Biochemistry Department**
Department supervising the course	**Biochemistry Department**
Program on which the course is given	**Bachelor of Pharmacy (Pharm-D)**
Academic Level	**Level Two, Second Semester, 2023-2024**
Date of course specification approval	**16/9/2023**

Basic Information: Course data:

Course Title	**Biochemistry-I**
Course Code	**PB222**
Prerequisite	**Registration**
Teaching Hours/ week: Lecture	**2**
Teaching Credit Hours: Practical/ tutorial	**1**
Total Credit Hours	**3**

Professional Information:

Course Aims:

To understand the chemical structure of different classes of biochemical compounds including; Carbohydrates, proteins, lipids and nucleic acids.

To learn the function of essential micro- and macromolecules; such as enzymes and co-enzymes in human body.

To utilize the provided knowledge in biochemical field and apply it in advanced courses of biochemistry.

Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- Fundamental Knowledge

Program K. element no.	Course K. element no.	Course K. element
(1.1.1)	**(1.1.1.1)**	**Recall in-depth and breadth knowledge of chemistry of biological molecules.**
(1.1.2)	**(1.1.2.1)**	**Recognize appropriate pharmaceutical and medical terminology, abbreviations and symbols in pharmacy practice and biological sciences.**
(1.1.3)	**(1.1.3.1)**	**Illustrate the principles of fundamental sciences to handle and identify biological molecules.**
(1.1.5)	**(1.1.5.1)**	**Identify and apply the principles, practice and critical understanding of fundamental sciences to solve problems related to human health and biochemical reactions in human body.**
(1.1.6)	**(1.1.6.1)**	**Describe relevant scientific literature and other scientific resources to make evidence-informed professional decisions.**

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
(2.2.1)	(2.2.1.1)	Identify biological macromoleculesand, pharmaceutical materials from different origins.
(2.3.1)	(2.3.1.1)	Select, and apply appropriate methods and procedures and resources for handling and disposal of synthetic/natural materials and biological items used in pharmacy.
(2.3.2)	(2.3.2.1)	Conduct best practices and adhere to high ethical, legal and safety standards for management of biological and pharmaceutical materials/products.

Domain 3: Pharmaceutical Care

Program K. element no.	Course K. element no.	Course K. element
(3.1.1)	(3.1.1.1)	Identify different biological macromolecules and micromolecules and biochemical, metabolic and immunological changes brought about by disease or concomitant drug therapy.
(3.1.4)	(3.1.4.1)	Illustrate the characters, epidemiology, and clinical features of infections/diseases and cancers, their impact on biological macromolecules and their treatment, prevention and nutritional care.

Domain 4: Personal Practice:

Program K. element no.	Course K. element no.	Course K. element
(4.1.1)	(4.1.1.1)	Share decision-making activities with other with other pharmacy team members and non-pharmacy team members and apply effective time management skills.
(4.1.2)	(4.1.2.1)	Collect information and analyze data, identify problems and present solutions, participate independently and collaboratively with other team members in the healthcare system.
(4.2.1)	(4.2.1.1)	Use clear language, pace, tone and non-verbal communication and writing skills when dealing with patients, other health team and communities.
(4.2.2)	(4.2.2.1)	Utilize advanced technologies and channels whenever possible to present relevant information.
(4.3.1)	(4.3.1.1)	Conduct self-evaluation strategies to manage and improve professional of pharmacy.
(4.3.2)	(4.3.2.1)	Promote continuous professional development by practicing self and independent learning.

3- Course Contents:

Week No.	Topics	Credit Hours
1	Introduction, protein chemistry and functions	2
2	Classification of amino acids and Protein structure	2
3	Oligopeptide, Hemoglobin and myoglobin, Fibrous protein collagen	2
4	Water-soluble vitamins	2
5	Fat-soluble vitamins	2
6	Enzymes	2
7	Carbohydrate chemistry	2
8	Nucleic acid chemistry: Nitrogenous bases	2
9	Nucleoside Post-transcriptional modifications	2
10	Lipid chemistry: -Different classes of lipid	2
11	- Neutral fats	2
12	Phospholipids	2
13	Cholesterol and ergosterol	2
14	Protein misfolding and revision	2
15	Compensatory and alternative lecture	2
16	Revision and quiz	2
17	Start of Final written and oral exam	-
Week No.	Practical topics	Practical credit hours
1	Monosaccharide	1
2	Disaccharide 1	1
3	Disaccharide 2	1

4	Polysaccharide	1
5	Carbohydrate revision	1
6	Protein introduction	1
7	Heat co-aggulable protein	1
8	Midterm exam	-
9	Neutral protein	1
10	Alkaline protein	1
11	Protein revision	1
12	Non-protein nitrogenous compounds (urea)	1
13	Non-protein nitrogenous compounds (uric acid)	1
14	Non-protein nitrogenous compounds revision	1
15	Revision and activity	1
16	Sheet and Practical Exam	-

Teaching and learning Methods:

No	Teaching and Learning Methods	Week	K. elements to beaddressed
4.1	Advanced lecture	1-16	1.1.1.1, 1.1.2.1, 1.1.5.1, 3.1.1.1, 3.1.4.1
4.2	Hybrid learning: On line learning through My mans "Mansoura university "	1-16	1.1.1.1, 1.1.2.1, 1.1.5.1, 1.1.6.1, 3.1.1.1, 3.1.4.1
4.3	Practical works and tutorials	1-16	1.1.2.1, 1.1.3.1, 1.1.5.1, 1.1.5.1, 2.2.1.1, 2.3.1.1, 2.3.2.1, 3.1.1.1, 4.1.1.1
4.4	Self-learning	13	4.1.1.1, 4.1.2.1, 4.3.1.1, 4.3.2.1
4.5	Presentation	3-9	4.3.1.1, 4.3.2.1

5- Student Assessment:

Assessment Methods:

Assessment Methods	K elements to be assessed
1-Written exam	1.1.1.1, 1.1.2.1,1.1.5.1, 1.1.6.1, 2.2.1.1
2-Practical exam applying OSPE	1.1.5.1, 2.2.1.1, 2.3.1.1, 2.3.2.1,4.1.1.1,4.1.2.1
3-Oral exam	1.1.1.1, 1.1.2.1, 1.1.6.1, 4.1.1.1, 4.3.2.1
4- Periodical (Mid-term exam) / Course work	1.1.2.1, 1.1.5.1, 1.1.6.1, 4.1.1.1, 4.1.2.1

Assessment schedule:

Assessment 1	Periodical (Mid-term exam) / Course work	7-9th week
Assessment 2	Practical/Tutorial exam	16th week
Assessment 3	Written exam	Starting from 17th week
Assessment 4	Oral exam	Starting from 17th week

Weighing of assessment:

1	Periodical (Mid-term) exam / Course work	15%
2	Practical examination and tutorial	25%
3	Final-term written examination	50%
4	Oral examination	10%
Total		100%

6- Facilities required for teaching and learning:

-Class room	Data show (during practical lessons) - Computers, Internet.
- Laboratory facilities	Microscopes, equipment, tools

7- List of References

No	Reference	Type
1.	Electronic book prepared by staff members	Course notes
2.	Recorded videos prepared by staff members	Videos on platform
3.	Ferrier, D. R., & Harvey, R. A. Lippincott Illustrated Reviews Series: Biochemistry. Philadelphia: Wolters Kluwer Health. Sixth, North American Edition edition-2020	Essential Book
4.	GeethaDamodaranK.Practical Biochemistry.2nd edition-2016.	Essential Book
5.	https://www.futurelearn.com/courses/biochemistry https://www.ekb.eg	websites

8- Matrix.1 course content versus course k. elements:

Course contents	Outcomes Domains / Key elements															
	Domain:1					Domain: 2			Domain: 3		Domain: 4					
	1.1.1.1	1.1.2.1	1.1.3.1	1.1.5.1	1.1.6.1	2.2.1.1	2.3.1.1	2.3.2.1	3.1.1.1	3.1.4.1	4.1.1.1	4.1.2.1	4.2.1.1	4.2.2.1	4.3.1.1	4.3.2.1
Theoretical Part																
Introduction, protein chemistry and functions	✓	✓				✓			✓							
Classification of amino acids and Protein structure	✓		✓			✓			✓							
Hemoglobin and myoglobin Introduction to vitamins	✓	✓				✓			✓							
Water-soluble vitamins		✓			✓	✓			✓							
Fat-soluble vitamins				✓	✓	✓			✓		✓			✓		✓
Enzymes		✓		✓		✓			✓			✓	✓		✓	
Carbohydrate chemistry	✓	✓				✓			✓	✓			✓			✓

Nucleic acid chemistry: -Nitrogenous bases -Nucleoside - Post-transcriptional modifications			✓	✓		✓			✓			✓		✓		✓
Lipid chemistry: -Different classes of lipid - Neutral fats	✓			✓		✓			✓	✓		✓	✓	✓	✓	
Phospholipids		✓			✓	✓			✓	✓		✓	✓	✓	✓	
Cholesterol and ergosterol Protein misfolding		✓			✓	✓			✓	✓			✓	✓		
Practical part																
Monosaccharide		✓	✓			✓	✓		✓							
Disaccharide			✓	✓		✓	✓		✓							
Polysaccharide			✓				✓		✓							
Carbohydrate revision			✓	✓		✓	✓		✓							
Protein (Heat co-aggulable protein)		✓	✓	✓		✓					✓		✓	✓		✓
Neutral protein			✓			✓	✓	✓	✓		✓		✓	✓	✓	✓

Alkaline protein			✓	✓		✓	✓		✓		✓			✓		✓
Protein revision			✓			✓	✓	✓	✓		✓			✓		✓
Non-protein nitrogenous compounds		✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Non-protein nitrogenous compounds revision		✓	✓			✓			✓		✓	✓	✓	✓		✓
Revision			✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓

Matrix.2 course contents, methods of learning and assessment:

Theoretical Part									
Course contents	Teaching and learning methods					Assessment methods			
	Advance lectures	Hybrid leaning	Lab session	Self-learning	presentation	Corse Work	Practical	Written	Oral
Introduction, protein chemistry and functions	√	√				√		√	√
Classification of amino acids and Protein structure	√	√				√		√	√
Oligopeptide, Hemoglobin and myoglobin, Fibrous protein collagen	√	√				√		√	√
Water-soluble vitamins	√	√				√		√	√
Fat-soluble vitamins	√	√				√		√	√
Enzymes	√	√				√		√	√
Carbohydrate chemistry	√	√				√		√	√
Nucleic acid chemistry: Nitrogenous bases	√	√				√		√	√
Nucleoside Post-transcriptional modifications	√	√						√	√
Lipid chemistry: -Different classes of lipid	√	√						√	√
- Neutral fats	√	√						√	√
Phospholipids	√	√						√	√
Cholesterol and ergosterol	√	√		√				√	√
Protein misfolding	√	√						√	√
Practical part									
Monosaccharide		√	√				√		
Disaccharide		√	√				√		
Polysaccharide		√	√		√		√		

Carbohydrate revision		√	√		√		√		
Protein (Heat co-aggulable protein)		√	√		√		√		
Neutral protein		√	√		√		√		
Alkaline protein		√	√		√		√		
Protein revision		√	√		√		√		
Non-protein nitrogenous compounds (urea)		√	√		√		√		
Non-protein nitrogenous compounds (uric acid)		√	√				√		
Non-protein nitrogenous compounds (revision)		√	√				√		
Revision		√	√						

Course Coordinator	**Dr. Noha M.H. Abdel- Rahman**
	
Head of Department	**Dr. Noha M.H. Abdel- Rahman**
	

Date: 16/9/2023

بكالوريوس الصيدلة (فارم د – **Pharm D**)

Course Specification

Academic year: 2023/2024

Course name: General Microbiology & Immunology	اسم المقرر : الميكروبيولوجيا العامة و المناعة
Academic Level: level 2	المستوى الأكاديمي : الثاني
Scientific department: Microbiology & Immunology	القسم العلمي: الميكروبيولوجيا والمناعة
Head of Department: **Prof. El Sayed E. Habib**	رئيس القسم : أ.د/ السيد الشربيني حبيب
Course Coordinator: **Prof. Mohammed Adel Hassan EL-sokarry**	منسق المقرر : أ.د/ محمد عادل حسن السكري

University	Mansoura
Faculty	Pharmacy
Department offering the course	Microbiology & Immunology
Department supervising the course	Microbiology & Immunology
Program on which the course is given	Bachelor's in pharmacy- Pharm D
Academic Level	Level two, second semester, 2023-2024
Date of course specification approval	10/9/2023

A. Basic Information: Course data:

Course Title	**General Microbiology & Immunology**
Course Code	**PM 221**
Prerequisite	Registration
Teaching credit Hours: Lecture	2
Teaching Credit Hours: Practical/ tutorial	1
Total Credit Hours	3

B. Professional Information:

1. Course Aims:

On completion of the course, the student will be able to:

1. Differentiate between different microorganisms.
2. Identify the structure of bacteria their growth requirements and associated genetics.
3. Appreciate the basic principles of immunology and the function of the immune system including its role in disease control

2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

Program K. element no.	Course K. element no.	Course K. element
1.1.1	1.1.1.1	Identify different classes of microorganism, their structure, genetic material and growth requirements in addition to components of immune system.
1.1.2	1.1.2.1	Identify different abbreviations and scientific expressions related to structure & growth of microorganisms, genetics and immune system.
1.1.5	1.1.5.1	Illustrate the defect in genetic material and its causes

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.5.2	2.5.2.1	Deduce the data of genetic analysis and healthy immune system under normal and unhealthy conditions.
	2.5.2.1	Recognize different shapes of bacteria and immune cells in clinical samples
2.5.3	2.5.3.1	Deduce the data of genetic analysis and healthy immune system under normal and unhealthy conditions.

Domain 3: pharmaceutical care

Program K. element no.	Course K. element no.	Course K. element
3.1.3	3.1.3.1	Cultivate microorganisms and control microbial growth
3.2.6	3.2.6.1	Regulate the use of immunization therapy according to the health status.

Domain 4: personal practice:

Program K. element no.	Course K. element no.	Course K. element
4.2.2	4.2.2.1	Apply advanced technologies to present relevant information

3- Course Contents:

A. Theoretical part

Week No.	Topics	Lecture credit Hours
1.	Introduction and classification of microorganisms.	2
2.	Identification of microorganisms	2
3.	Classification of microorganisms	2
4.	Microbial structure	2
5.	Microbial growth requirements	2
6.	Replication	2
7.	Transcription	2
8.	Translation and transferable genetic materials	2
9.	Introduction to immunology	2
10.	Innate immune response	2
11.	Complement system	2
12.	Adaptive immune response	2
13.	Physical mutations	2
14.	Chemical mutations	2
15.	Compensatory and alternative lecture	2
16.	Revision and quiz	2
17.	**Final Theoretical exam**	2

B. Practical part:

Week No.	Practical Topics	Practical credit hours
1.	Microscope, shape & arrangement of bacteria	1
2.	Simple stain	1
3.	Differential stains (Characters and types)	1
4.	Gram stain (identification of unknown mixtures)	1
5.	Acid fast stain	1
6.	spore stain	1
7.	Streaking for isolation	1
8.	Medterm exam	-
9.	Media	1
10.	Biochemical activity of bacteria	1
11.	Serological tests (CRP, Rheumatoid factors)	1
12.	Serological tests (Rheumatoid factors)	1
13.	ELISA technique	1
14.	Blood grouping	1
15.	**Revision and activity**	1
16.	**Practical Exam (applying OSPE)**	-

4- Teaching and Learning Methods:

No	Teaching and Learning Methods	week	Key elements to be addressed
4.1	**Computer aided learning:** a. Lectures using Data show, power Point presentations. b. Distance learning ● Online learning through my mans "Mansoura university "as recorded – video lectures ● Inter active discussion through My Mans	**1-16**	**1.1.1.1,1.1.2.1, 1.1.5.1, 2.5.2.1, 2.5.3.1, 3.1.3.1, 3.2.6.1**
4.2	**Self-learning**	**13**	**4.2.2.1**
4.3	**Practical session using chemicals and laboratory equipment**	**1-16**	**2.5.2.1, 3.1.3.1**
4.4	**Class Activity:** Group discussion offline and online.	**12**	**3.1.3.1, 3.2.6.1,4.2.2.1**
4.5	**Problem – based learning and brainstorming**	**11**	**3.1.3.1, 3.2.6.1,4.2.2.1**
4.6	**Research assignments**	**11**	**4.2.2.1**

5- Student Assessment:

a- Assessment Methods:

Assessment Methods	K elements to be assessed
1- Periodical (Mid-term exam) / Course work	**1.1.1.1,1.1.2.1, 1.1.5.1, 2.5.2.1, 2.5.2.1, 2.5.3.1, 3.1.3.1, 3.2.6.1**
2-Practical exam applying OSPE	**2.5.2.1, 3.1.3.1**
3-Written exam	**1.1.1.1,1.1.2.1, 1.1.5.1, 2.5.2.1, 2.5.2.1, 2.5.3.1, 3.1.3.1, 3.2.6.1**
4-Oral	**1.1.1.1,1.1.2.1, 1.1.5.1, 2.5.2.1, 2.5.2.1, 2.5.3.1, 3.1.3.1, 3.2.6.1**

b. Assessment schedule

Assessment 1	Periodical (Mid-term exam) / Course work	7^{th}-9^{th} week
Assessment 2	Practical examination and tutorial	16^{th} week
Assessment 3	Written exam	Starts at 17^{th}
Assessment 4	Oral exam	Starts at 17^{th}

c. Weighing of assessments

1	Periodical (Mid-term) exam / Course work	15%
2	Practical examination and tutorial	25%
3	Final-term examination	50%
4	Oral examination	10%
Total		**100%**

6- Facilities required for teaching and learning

Classroom	**Data show- Computers, Internet.**
Laboratory facilities	**Microscopes- chemicals- glass wares- white board**

7 - List of References

No	Reference	Type
1.	**Course notes prepared by the department staff members**	**Course notes**
2.	Cappuccino, James G., and Chad T. Welsh. Microbiology: **A laboratory manual. Pearson Education, 2017.**	**Book**
3.	Kathleen, Talaro, and Barry Chess. **Foundations in microbiology. 2018**	**Book**

4.	Leboffe, Michael J., and Burton E. Pierce. Microbiology: **Laboratory Theory and Application, Essentials. Morton Publishing Company, 2019**	**Book**
5.	Abbas, Abul K., Andrew H. Lichtman, and Shiv Pillai. Basic Immunology E-Book: **Functions and Disorders of the Immune System. Elsevier Health Sciences, 2019**	**Book**
6.	http://www.pubmed.com https://www.ekb.eg	**Website**

8- Matrices of course contents:

Matrix 1: matrix between course content and course k. elements:

Course contents	Course key elements							
	Domain 1			Domain 2		Domain 3		Domain 4
	1.1.1.1	1.1.2.1	1.1.5.1	2.5.2.1	2.5.3.1	3.1.3.1	3.2.6.1	4.2.2.1
A. Theoretical part:								
Introduction and classification of microorganisms.	√	√		√		√		
Identification of microorganisms	√	√		√		√		
Classification of microorganisms	√	√		√		√		
Microbial structure	√	√		√		√		
Microbial growth requirements	√	√		√		√		
Replication	√	√	√	√	√			
Transcription	√	√	√	√	√			
Translation and transferable genetic materials	√	√	√	√	√			
Introduction to immunology	√	√		√	√		√	
Innate immune response	√	√		√	√		√	√
Complement system	√	√		√	√		√	√
Adaptive immune response	√	√		√	√		√	√
Physical mutations	√	√	√	√	√			
Chemical mutations	√	√	√	√	√			

Course contents	Course key elements

	Domain 1			Domain 2		Domain 3		Domain 4
	1.1.1.1	1.1.2.1	1.1.5.1	2.5.2.1	2.5.3.1	3.1.3.1	3.2.6.1	4.2.2.1
B. Practical part:								
Microscope, shape & arrangement of bacteria	√	√		√	√	√		
Simple stain	√	√		√	√	√		
Differential stains (Characters and types)	√	√		√	√	√		
Gram stain (identification of unknown mixtures)	√	√		√	√	√		
Acid fast stain and spore stain	√	√		√	√	√		
Streaking for isolation	√	√		√	√	√		
Media	√	√		√	√	√		
Biochemical activity of bacteria	√	√		√	√	√		
Serological tests (CRP, Rheumatoid factors)	√	√		√	√	√		
Serological tests (Rheumatoid factors)	√	√		√	√	√		
ELISA technique	√	√		√	√	√		
Blood grouping	√	√		√	√	√		

Matrix 2: Matrix between course contents, methods of learning and assessment:

A) Theoretical Part:

Course Contents	Teaching and Learning Methods						Assessment methods			
	Lecture	Online lecture	Lab sessions	Problem solving	Case Study	Self-learning	Corse Work	Practical/Tutorial	Written	Oral
Introduction and classification of microorganisms.	√	√							√	√
Identification of microorganisms	√	√							√	√
CLASSIFICATION OF MICROORGANISNS	√	√							√	√
Bacterial structure	√	√							√	√
Microbial growth requirements	√	√							√	√
Replication	√	√							√	√
Transcription	√	√							√	√
Periodical / (Mid-term exam)	√	√					√		√	√
Translation and transferable genetic materials	√	√			√				√	√
Introduction to immunology	√	√		√					√	√
Innate immune response	√	√		√					√	√
Complement system	√	√		√	√	√			√	√
Adaptive immune response (self-learning)	√	√				√			√	√
Mutations	√	√				√		√	√	√

B) Practical part:

Course Contents	Teaching and Learning Methods						Assessment methods			
	Lecture	Online lecture	Lab sessions	Problem solving	Case Study	Self-learning	Corse Work	Practical/Tutorial	Written	Oral
Microscope, shape & arrangement of bacteria		√	√							
Simple stain		√	√							
Differential stains (Characters and types)		√	√							
Gram stain (identification of unknown mixtures)		√	√							
Acid fast stain and spore stain		√	√							
Streaking for isolation		√	√							
Media		√	√	√		√				
Biochemical activity of bacteria		√	√				√			
Serological tests (CRP, Rheumatoid factors)		√	√							
Serological tests (Rheumatoid factors)		√	√	√						
ELISA technique		√	√		√					
Blood grouping		√	√		√	√				

Mansoura University

Faculty of Pharmacy

Quality Assurance Unit

Course Specification

Pharm D Program

2023- 2024

Course Coordinator	**Prof. El Sayed E. Habib**
	
Head of Department	**Prof. Mohammed Adel Hassan El-Sokarry**
	

Date: 10/9/2023

بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

Course name: Instrumental Analysis	**اسم المقرر : تحليل آلى**
Academic Level: Second	**المستوى الأكاديمي : الثانى**
Scientific department: Pharmaceutical analytical chemistry	**القسم العلمي : الكيمياء التحليلية الصيدلية**
Head of Department: Prof. Dr. Jenny J. Nasr	**رئيس القسم :أد/ جينى جيهان نصر**
Course Coordinator: Prof. Dr. Shereen Shalan	**منسق المقرر : أ.د/شيرين شعلان**

Mansoura University

Faculty of Pharmacy

Quality Assurance Unit

Course Specification

Pharm D Program

2023- 2024

University	Mansoura
Faculty	Pharmacy
Department offering the course	Pharmaceutical analytical chemistry
Department supervising the course	Pharmaceutical analytical chemistry
Program on which the course is given	Bachelor in Pharmacy Pharm D
Academic Level	Second
Date of course specification approval	10/9/2023

A. Basic Information: Course data:

Course Title	Instrumental Analysis
Course Code	PA 224
Prerequisite	**Registration**
Teaching Hours: Lecture	2
Teaching Credit Hours: Practical/ tutorial	1
Total Credit Hours	3

B. Professional Information:

1. Course Aims:

1. Acquire the basic concepts of analysis which include:
    - UV/Visible spectroscopy, principle of instrumentation, and application in pharmaceutical analysis.
    - Fluorimetric methods; instrumentation, and application.
    - Atomic spectroscopy; principle and instrumentation.
2. Distinguish the basic principles of chromatography in TLC, gel chromatography, HPLC, UPLC and capillary electrophoresis.

2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- Fundamental Knowledge

Program K. elements no	Course K. elements no	Course K. elements
(1.1.1)	(1.1.1.1)	**Clarify the theory and principles of Spectroscopy, Atomic absorption and Chromatography.**
(1.1.3)	(1.1.3.1)	**Combine the principles of different analytical techniques using instruments for the estimation of pharmaceutical compounds.**

Domain 2: Professional and Ethical Practice

Program K. elements no	Course K. elements no	Course K. elements
(2.2.1)	(2.2.1.1)	**Select and apply spectroscopic analytical methods or chromatographic methods to analyze pharmaceutical materials .**
(2.2.3)	(2.2.3.1)	**Demonstrate the principles of various analytical instruments used for the analysis of different raw materials.**
(2.2.4)	(2.2.4.1)	**Explain the principles of pharmaceutical calculations and their applications to pharmaceutical and environmental analysis.**
(2.3.1)	(2.3.1.1)	**Select appropriate methods for handling and disposal of materials used in pharmaceutical analysis.**
(2.3.2)	(2.3.2.1)	**Adapt ethical and legal and safety guidelines for handling and disposal of biologicals and pharmaceutical materials or products**

Domain 4: Personal Practice:

Program K. elements no	Course K. elements no	Course K. elements
(4.1.1)	(4.1.1.1)	**Demonstrate responsibility for team performance and beer evaluation of other team members and express time management skill**

(4.1.2)	(4.1.2.1)	**Retrieve and analyze information to solve problems, and work individually or effectively in a team.**
(4.2.2)	(4.2.2.1)	**Apply contemporary technologies to demonstrate effective presentation skills**
(4.3.1)	(4.3.1.1)	**Apply effective strategies to manage and improve self-practice of pharmacy**
(4.3.2)	(4.3.2.1)	**Practice self-learning needed to improve professional skills**

3- Course Contents:

Week No.	Topics	Hours
1	**Introduction to Chromatography**	2
2	**Paper chromatography –Thin layer chromatography**	2
3	**Column chromatography**	2
4	**High performance liquid chromatography**	2
5	**Gas chromatography**	2
6	**Capillary Electrophoresis**	2
7	**Introduction to Spectrophotometry**	2
8	**Instrumentation of Spectrophotometry**	2
9	**Application of Spectrophotometry.**	2
10	**1- Introduction to Spectrofluorimetry** **2- Pharmaceutical applications of Spectrofluorimetry (Self learning)**	2
11	**Application of Spectrofluorimetry**	2
12	**Atomic absorption** **Applications of atomic absorption spectroscopy (Self learning)**	2
13	**Application to Atomic absorption**	2
14	**Application to Atomic emission spectroscopy**	2
15	**Compensatory and alternative lecture**	2

16	**Revision and quiz**	2
17	**Written and Oral Exams**	-
Week No.	**Practical topics**	Hours
1	**1-Introduction to spectrophotometry** **2- Beer's Lambert Law**	1
2	**1-Coloremetric determination of KMnO4** **2-Problems on Beer's Lambert Law (graphical method)**	1
3	**1-Coloremetric determination of $K_2Cr_2O_7$** **2-Colorimetric determination of Aspirin** **3-Problems on Beer's Lambert Law(Regression using calculator)**	1
4	**1-Coloremetric determination of $CuSO_4$** **2-Problems on Beer's Lambert Law(graphical method)**	1
5	**1-Coloremetric determination of $FeCl_3$** **2- Colorimetric Determination of Iron"Ferric (Fe^{+3})"in certain pharmaceutical preparations**	1
6	**Problems on Beer's Lambert Law (graphical method)**	1
7	**1- Spectrofluorimetry (native fluorescence)** **2- Spectrofluorimetric determination of Eosin yellow (eosin Y)**	1
8	**Midterm exam**	-
9	**Paper Chromatography separation of green dye.**	1
10	**TLC demonstration**	1
11	**1-Interpretation of chromatograms of two analytes**	1
12	**1-Interpretation of chromatograms of three analytes**	1
13	**HPLC demonstration**	1
14	**HPLC demonstration (continued)**	1
15	**Revision and activity**	1
16	**Practical Exams (OSPE) + Practical Sheet**	-

4- Teaching and learning Methods:

	Teaching and learning Methods	Week no.
4.1	Computer aided learning: a. Lectures using Data show, power Point presentations b. Distance learning ● On line learning through my mans "Mansoura university "as recorded – video lectures ● Inter active discussion through My Mans	1-16 4&7
4.2	Self-learning	10 & 12
4.3	Practical session using chemicals and laboratory equipment and/ or tutorials and recorded videos through MyMans	1-12
4.4	Class Activity: Group discussion offline and online.	4
4.5	Problem – based learning and brainstorming	2-4 & 6 & 9 & 10

5- Student Assessment:

a- Assessment Methods:

Assessment Methods	K elements to be assessed
1-Written exam	**1.1.1.1., 1.1.3.1, 2.2.1.1, 2.2.3.1, 2.2.4.1**
2-Practical exam (OSPE)	**2.2.4.1, 2.3.1.1,2.3.2.1, 4.1.1.1, 4.1.2.1, 4.2.2.1, 4.3.1.1, 4.3.2.1**
3-Oral	**1.1.1.1, 1.1.3.1, 2.2.1.1, 2.2.3.1, 2.2.4.1, 4.1.2.1**
4-Periodical /course work	**1.1.1.1., 1.1.3.1, 2.2.1.1, 2.2.3.1, 2.2.4.1**

b. Assessment schedule

Assessment 1	Periodical (Mid-term exam) / Course work	7^{th} – 9^{th} week
Assessment 2	Practical examination and tutorial	16^{th} week
Assessment 3	Written exam	17^{th} week
Assessment 4	Oral exam	17^{th} week

c. Weighing of assessments

1	Periodical exam / Course work	15%
2	Practical examination and tutorial	25%
3	Final-term written examination	50%
4	Oral examination	10%
Total		100%

6- Facilities required for teaching and learning

-Class room	Data show, Computers, Internet.
- Laboratory facilities	Chemicals- glass wares- white board

7- List of References

No	Reference	Type
1.	Electronic book and practical notes prepared by Staff Members of the Department (2023-2024).	Course notes
2.	Recorded videos prepared by Staff Members of the Department	Videos on platform
3.	Principles of Instrumental Analysis, Skoog, Holler, Nieman, Harcourt Brace, 7th edition (2018).	Essential Book
4.	Analytical chemistry, Christian, Gary D., Purnendu K. Dasgupta, and Kevin A. Schug. 6th ed. John Wiley & Sons (2013).	Essential Book
6.	Quantitative Chemical Analysis, Daniel C. Books Harris, 9th ed., W.H. Freeman and Company, New York (2015)	Essential Book
7.	Modern Instrumental Analysis (Comprehensive Analytical Chemistry); Satinder Ahuja (Editor), Neil ; Publisher Elsevier Science (17 Oct 2006).	Supplementary Textbooks
8.	https://WWW.sciencedirect.com https://WWW.google scholar.com https://WWW.ekb.eg https://WWW.pubmed.com	Websites

8-A) Matrix of course content versus course k. elements:

Course contents / K. elements	Domain: 1		Domain: 2					Domain: 4				
	1.1.1.1	1.1.3.1	2.2.1.1	2.2.3.1	2.2.4.1	2.3.1.1	2.3.2.1	4.1.1.1	4.1.2.1	4.2.2.1	4.3.1.1	4.3.2.1
Introduction to Chromatography	✔			✔								
Paper chromatography –Thin layer chromatography	✔											
Column chromatography	✔	✔	✔			✔						
High performance liquid chromatography	✔	✔		✔	✔	✔						
Gas chromatography		✔	✔	✔	✔	✔						
Capillary Electrophoresis.		✔		✔	✔	✔						
Introduction to Spectrophotometry	✔			✔		✔						
Instrumentation of Spectrophotometry	✔		✔	✔								
Application of Spectrophotometry.		✔	✔		✔		✔					
3- Introduction to Spectrofluorimetry Pharmaceutical applications of	✔					✔		✔	✔	✔	✔	✔

Spectrofluorimetry (Self learning)												
Application of Spectrofluorimetry	✔	✔	✔		✔		✔					
Atomic absorption **Applications of atomic absorption spectroscopy (Self learning)**	✔			✔				✔	✔	✔	✔	✔
Application to Atomic absorption		✔					✔					
Application to Atomic emission spectroscopy		✔					✔					
Practical Topics 1-Introduction to spectrophotometry 2- Beer's Lambert Law	✔		✔	✔	✔	✔						
1-Coloremetric determination of KMnO4 2-Problems on Beer's Lambert Law (graphical method)	✔		✔	✔	✔	✔		✔	✔			✔
1-Coloremetric determination of $K_2Cr_2O_7$ 2-Colorimetric determination of Aspirin 3-Problems on Beer's Lambert Law(Regression using calculator)	✔	✔	✔	✔	✔			✔	✔			✔
1-Coloremetric determination of $CuSO_4$ 2-Problems on Beer's Lambert Law(graphical method)			✔	✔	✔	✔	✔	✔	✔			✔
1-Coloremetric determination of $FeCl_3$ 2- Colorimetric Determination of Iron"Ferric (Fe^{+3})"in certain pharmaceutical preparations	✔	✔	✔	✔	✔	✔		✔	✔			✔

Problems on Beer's Lambert Law (graphical method)					✔	✔	✔	✔	✔		✔	✔
3- Spectrofluorimetry (native fluorescence) Spectrofluorimetric determination of Eosin yellow (eosin Y)	✔	✔			✔		✔					
1-Paper Chromatography separation of green dye. 2-TLC demonstration	✔		✔	✔	✔	✔		✔	✔			
1-Interpretation of chromatograms of two analytes	✔	✔	✔			✔		✔	✔			✔
1-Interpretation of chromatograms of three analytes					✔	✔		✔	✔		✔	✔
1- HPLC demonstration	✔	✔	✔			✔						
1- HPLC demonstration (continued)	✔	✔	✔			✔						

8-B) Matrix 2. between course contents, methods and assessment

A) Theoretical Part:						
Course Contents	**Teaching and Learning Methods**			**Assessment Methods**		
	Lecture	**Lab sessions**	**Self-learning**	**Practical/Tutorial**	**Written**	**Oral**
Introduction to Chromatography	√				√	√
Paper chromatography –Thin layer chromatography	√				√	√
Column chromatography	√				√	√
High performance liquid chromatography	√				√	√
Gas chromatography	√				√	√
Capillary Electrophoresis	√				√	√
Introduction to Spectrophotometry	√				√	√
Instrumentation of Spectrophotometry	√				√	√

Application of Spectrophotometry.	√				√	√
1- Introduction to Spectrofluorimetry **2- Pharmaceutical applications of Spectrofluorimetry (Self learning)**	√		√		√	√
Application of Spectrofluorimetry	√				√	√
1- Atomic absorption **2-Applications of atomic absorption spectroscopy (Self learning)**	√		√		√	√

B) Practical Part:

Course Contents	Teaching and Learning Methods	Assessment methods					
Application to Atomic absorption		√				√	√
Application to Atomic emission spectroscopy		√				√	√

	Lecture	Lab sessions	Self-learning	Practical/Tutorial	Written	Oral
1-Introduction to spectrophotometry **2- Beer's Lambert Law**		√		√		
1-Coloremetric determination of $KMnO_4$ **2-Problems on Beer's Lambert Law(graphical method)**		√		√		
1-Coloremetric determination of $K_2Cr_2O_7$ **2-Colorimetric determination of Aspirin** **3-Problems on Beer's Lambert Law (Regression using calculator)**		√		√		

1-Coloremetric determination of $CuSO_4$ **2-Problems on Beer's Lambert Law(graphical method)**		√		√		
1-Coloremetric determination of $FeCl_3$ **2- Colorimetric Determination of Iron"Ferric (Fe^{+3})"in certain pharmaceutical preparations**		√		√		
Problems on Beer's Lambert Law(graphical method)		√		√		
1- Spectrofluorimetry (native fluorescence)		√		√		
1- Spectrofluorimetric determination of Eosin yellow(eosin Y)		√		√		
1-Paper Chromatography separation of green dye.		√		√		
1-TLC demonstration		√		√		

1-Interpretation of chromatograms **2-Hplc demonstration**		√		√		
2-Hplc demonstration		√		√		

Course Coordinator	**Prof. Dr Shereen Shalan**
Head of Department	**Prof. Dr. Jenny Jeehan Nasr**

Date: 10/9/ 2023

بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

Course name: Pathophysiology	**اسم المقرر : علم وظائف الأعضاء المرضى**
Academic Level: Level 2	**المستوى الأكاديمي : الثاني**
Scientific department: Pharmacology & Toxicology	**القسم العلمي : الأدوية والسموم**
Head of Department: **Prof Dr Manar A Nader**	**رئيس القسم :** **ا.د/ منار احمد نادر**
Course Coordinator: **Dr Manar Gamal Abd El-Hamid**	**منسق المقرر :** **د/ منار جمال عبد الحميد**

University	**Mansoura**
Faculty	**Pharmacy**
Department offering the course	**Pharmacology & Toxicology**
Department supervising the course	**Pharmacology & Toxicology**
Program on which the course is given	**Bachelor in Pharmacy -Pharm D**
Academic Level	**Second level, second semester, 2023/2024**
Date of course specification approval	**18 September 2023**

A. Basic Information: Course data:

Course Title	**Pathophysiology**
Course Code	**PH 223**
Prerequisite	**Registration**
Teaching credit Hours: Lecture	**1**
Teaching Credit Hours: Tutorial	**1**
Total Credit Hours	**2 (Credit H)**

B. Professional Information:

1. Course Aims:

This course enables the students to:

Understand the basic dysfunctions of the body systems.

Introduce concepts of abnormal cellular, tissue and system hemostasis.

Know the basic concepts of pathophysiology at the cellular level related to injury, the self-defense mechanism, mutation and cellular proliferation, and the pathological factors that influence the disease process as well as clinical manifestations associated with the diseased organs.

2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

Program K. element no.	Course K. element no.	Course K. element
1.1.1	1.1.1.1	Realize knowledge of pharmaceutical, biomedical, administrative and clinical sciences
1.1.2	1.1.2.1	Utilize the proper pharmaceutical and medical terminology in pharmacy practice and recall names of drug.
(1.1.8)	1.1.8.1	Gather health informatics to improve the quality of health and nutritional care, manage resources and optimize patient safety and understand metabolic disorders.

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.5.2	2.5.2.1	Integrate relevant, necessary evidence-based information about a patient's health-related care needs.
2.5.3	2.5.3.1	Use scientific principles of research and utilize systematic studies in the research.

Domain 3: Pharmaceutical Care

Program K. element no.	**Course K. element no.**	**Course K. element**
3.1.1	**3.1.1.1**	**Apply a dosage regimen for a patient on the basis of physiological and immunological changes made by disease.**
3.1.4	**3.1.4.1**	**Utilize etiology, epidemiology, pathogenesis, laboratory diagnosis, and clinical features to various diseases.**

Domain 4: Personal Practice:

Program K. element no.	Course K. element no.	Course K. element
4.2.1	**4.2.1.1**	**Retrieve clear language, pace, tone and non-verbal communication and writing skills when dealing with patients, other health team and communities.**
4.3.2	**4.3.2.1**	**Practice self and independent knowledge.**

3- Course Contents:

Week No.	Theoretical Topics	Lecture credit Hours
1	Introduction to pathophysiology	1
2	Vascular disorder	1
3	Diseases of urinary system	1
4	Diseases of digestive system (peptic ulcer & GERD)	1
5	Diseases of digestive system (IBS & IBD)	1
6	Endocrine disorders (diabetes & pituitary disorder)	1
7	Endocrine Disorders (adrenal & thyroid disorder))	1
8	Diseases of nervous system	1
9	Diseases of pulmonary system (asthma & COPD)	1
10	Diseases of pulmonary system (allergic rhinitis & cystic fibrosis)	1
11	Pancreatic disorders	1
12	Hematological disorders	1
13	Fluid and electrolyte imbalance (part 1)	1
14	Fluid and electrolyte imbalance (part 2) (self learning)	1
15	Compensatory and alternative lecture	1

16	Revision and quiz	1
Starting from 17	Final written and oral exam	--

Week No.	Tutorial topics	Practical credit hours
1.	Cell injury and adaptation	1
2.	Inflammation and repair	1
3.	Immune disorder	1
4.	Diseases of bone and joint	1
5.	Infectious diseases	1
6.	Sexually transmitted diseases	1
7.	Hematological disorders	1
8	Midterm exam	-
9	Reproductive disorders	1
10	Cardiovascular disorders	1
11	Cardiovascular disorders	1
12	Diabetes case (part 1)	1
13	Diabetes case (part 2)	1
14	Case studies	1
15	Revision and activity	1
16	Tutorial exam	-

4- Teaching and learning Methods:

	Teaching and learning Methods	Week no	K. elements to be addressed
4.1	Advanced lectures Lectures using Data show, power Point presentations Brain storming Group discussion	1-16	1.1.1.1- 1.1.2.1-1.1.8.1-2.5.2.1-2.5.3.1-3.1.1.1-3.1.4.1-4.2.1.1-4.3.2.1
4.2	Hybrid learning: On line learning through My mans "Mansoura university "	1-16	1.1.1.1- 1.1.2.1-1.1.8.1-2.5.2.1-2.5.3.1-3.1.1.1-3.1.4.1-4.2.1.1-4.3.2.1
4.3	Practical Training / Laboratory	1-16	1.1.1.1- 1.1.2.1-1.1.8.1-2.5.2.1-2.5.3.1-3.1.1.1-3.1.4.1-4.2.1.1-4.3.2.1
4.4	Self learning	14	4.2.1.1-4.3.2.1
4.5	Collaborative learning	2-12	1.1.1.1- 1.1.2.1-1.1.8.1-2.5.2.1-2.5.3.1-3.1.1.1-3.1.4.1-4.2.1.1-4.3.2.1

5- Student Assessment:

Assessment Methods:

Assessment Methods	K elements to be assessed
1-Written exam	1.1.1.1- 1.1.2.1-1.1.8.1-2.5.2.1-2.5.3.1-3.1.1.1-3.1.4.1-4.2.1.1-4.3.2.1
2-Tutorial exam applying OSPE	1.1.1.1- 1.1.2.1-1.1.8.1-2.5.2.1-2.5.3.1-3.1.1.1-3.1.4.1-4.2.1.1-4.3.2.1
3-Oral	1.1.2.1-3.1.1.1-3.1.4.1-4.2.1.1-4.3.2.1
4- Periodical (Mid-term exam) / Course work	1.1.1.1- 1.1.2.1-1.1.8.1-2.5.2.1-2.5.3.1-3.1.1.1-3.1.4.1-4.2.1.1-4.3.2.1

Assessment schedule

Assessment 1	Periodical (Mid-term exam) / Course work	7th- 9th week
Assessment 2	Practical examination and tutorial	16th week
Assessment 3	Written exam	Starting from 17th week
Assessment 4	Oral exam	Starting from 17th week

c. Weighing of assessments

1	**Periodical (Mid-term) exam / Course work**	**15%**
2	**Practical examination and tutorial**	**25%**
3	**Final-term written examination**	**50%**
4	**Oral examination**	**10%**
Total		**100%**

6- Facilities required for teaching and learning

-Class room	Data show- Computers- Internet.
- Laboratory facilities	white board- Data show- Computers

7- List of References

No	Reference	Type
1.	**Electronic book prepared by staff members**	**Course notes**
2.	**Recorded videos prepared by stuff members**	**Videos on platform**
3.	**Shane Bullock and Majella Hales (2013): Principles of pathophysiology 2nd edition, Frenchs Forest, NSW: Pearson Australia, ISBN: 9780733994159, pages 1197**	**Book**
4	**Robert J. Alpern, Michael Caplan, Orson W. Moe, Susan E. Quaggin (2023) ; Physiology and Pathophysiology 6th edition, Academic Press: ISBN-13: 978-0128153895**	**Book**
5.	**http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg**	**Websites**

8-Matrix of course content versus course

Course contents / K. elements	**Domain 1**				**Domain 2**			**Domain 3**			**Domain 4**	
	1.1.1.1	**1.1.2.1**	**1.1.8.1**		**2.5.2.1**	**2.5.3.1**		**3.1.1.1**	**3.1.4.1**		**4.2.1.1**	**4.3.2.1**
Introduction to pathophysiology	✓											
Vascular disorder		✓	✓			✓		✓				
Diseases of urinary system		✓	✓		✓	✓		✓	✓			
Diseases of digestive system (peptic ulcer & GERD)		✓	✓			✓		✓				
Diseases of digestive system (IBS & IBD)		✓	✓		✓	✓		✓	✓			
Endocrine disorders (diabetes & pituitary disorder)		✓	✓		✓	✓		✓	✓			

Endocrine Disorders (adrenal & thyroid disorder))		✓	✓			✓	✓		✓	✓				
Diseases of nervous system		✓	✓				✓		✓					
Diseases of pulmonary system (asthma & COPD)		✓	✓			✓	✓		✓			✓		
Diseases of pulmonary system (allergic rhinitis & cystic fibrosis)		✓	✓			✓	✓		✓	✓		✓		
Pancreatic disorders		✓	✓				✓		✓			✓		✓
Hematological disorders	✓	✓	✓						✓	✓				
Fluid and electrolyte imbalance (part 1)												✓	✓	
Fluid and electrolyte imbalance (part 2) (self learning)												✓	✓	

Matrix 2. Between course contents, methods of learning, and assessment

A) Theoretical part:

Course contents / K. elements	Domain 1					Domain 2								
	1.1.1.1	1.1.2.1	1.1.6.1	1.1.7.1		2.4.4.1	2.5.3.1		3.1.1.1	3.1.2.1	3.1.4.1	4.2.1.1	4.2.2.1	4.3.2.1
Cell injury and adaptation	✓													
Inflammation and repair	✓	✓	✓	✓			✓		✓		✓			
Immune disorder	✓	✓	✓	✓		✓	✓		✓	✓	✓			
Diseases of bone and joint	✓	✓	✓	✓			✓		✓		✓			
Infectious diseases	✓	✓	✓	✓		✓	✓		✓	✓	✓			
Sexually transmitted diseases	✓	✓	✓	✓		✓	✓		✓	✓	✓			
Hematological disorders	✓	✓	✓	✓		✓	✓		✓	✓	✓			
Reproductive disorders	✓	✓	✓	✓			✓		✓		✓			
Cardiovascular disorders	✓	✓	✓	✓		✓	✓		✓		✓	✓		
Cardiovascular disorders	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓		
Diabetes case (part 1)	✓	✓	✓	✓			✓		✓		✓	✓	✓	✓
Diabetes case (part 2)	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓

Course Contents	Teaching and Learning methods	Assessment methods

	Advanced Lecture	Hybrid Learning	Collaborative learning	Self-learning	Corse Work	Practical/ Tutorial	Written	Oral
Introduction to pathophysiology	✓	✓			✓		✓	✓
Vascular disorder	✓	✓			✓		✓	✓
Diseases of urinary system	✓	✓			✓		✓	✓
Diseases of digestive system (peptic ulcer & GERD)	✓	✓	✓		✓		✓	✓
Diseases of digestive system (IBS & IBD)	✓	✓	✓				✓	✓
Endocrine disorders (diabetes & pituitary disorder)	✓	✓	✓				✓	✓
Endocrine Disorders (adrenal & thyroid disorder))	✓	✓	✓				✓	✓
Diseases of nervous system	✓	✓	✓				✓	✓
Diseases of pulmonary system (asthma & COPD)	✓	✓					✓	✓
Diseases of pulmonary system (allergic rhinitis & cystic fibrosis)	✓	✓					✓	✓
Pancreatic disorders		✓					✓	✓
Hematological disorders	✓	✓					✓	✓
Fluid and electrolyte imbalance (part 1)							✓	✓
Fluid and electrolyte imbalance (part 2)							□	□

B) Practical part:

Mansoura University
Faculty of Pharmacy
Quality Assurance Unit
Course specification
2023- 2024
Pharm D Program

Course Contents	Teaching and Learning methods			Assessment methods			
	Practical work/ tutorial	hybrid learning	Collaborative learning	Course Work	Practical/ Tutorial	Written	Oral
Cell injury and adaptation	✓	✓			✓		
Inflammation and repair	✓	✓	✓	✓	✓		
Immune disorder	✓	✓	✓	✓	✓		
Diseases of bone and joint	✓	✓	✓	✓	✓		
Infectious diseases	✓	✓	✓	✓	✓		
Sexually transmitted diseases	✓	✓	✓	✓	✓		
Hematological disorders	✓	✓	✓	✓	✓		
Reproductive disorders	✓	✓	✓	✓	✓		
Cardiovascular disorders	✓	✓	✓	✓	✓		
Cardiovascular disorders	✓	✓	✓	✓	✓		
Diabetes case (part 1)	✓	✓	✓	✓	✓		
Diabetes case (part 2)	☐	☐	☐	☐	☐		

Course Coordinator	Dr. Manar Gamal Abdelhamid
Head of Department	Prof. Manar Ahmed Nader

Approval Date: 18/9/2023

(بكالوريوس الصيدلة) فارم د – (Pharm D)

Course Specification

Academic year: 2023/2024

Course name: Pharmaceutics II	اسم المقرر: صيدلانيات 2
Academic Level: Level 2	المستوى الأكاديمي: الثاني
Scientific department: Pharmaceutics	القسم العلمي: الصيدلانيات
Head of Department: **Prof. Dr. Irhan Ibrahim Abu Hashim**	رئيس القسم : أ.د/ إرهان إبراهيم أبوهاشم
Course Coordinator: **Prof. Dr. Thanaa Mohamed ELsaid Borg**	منسق المقرر: أ.د/ ثناء محمد السعيد برج

University	Mansoura
Faculty	Pharmacy
Department offering the course	Pharmaceutics
Department supervising the course	Pharmaceutics
Program on which the course is given	**Bachelor in Pharmacy -Pharm D**
Academic Level	Second level, Second semester, 2023/2024
Date of course specification approval	September 2023

A-Basic Information: Course data:

Course Title	**Pharmaceutics II**
Course Code	**PT 224**
Prerequisite	**No**
Teaching Hours: Lecture	**2**
Practical	**1**
Total Credit Hours	**3 (Credit H)**

B. Professional Information:

1-Course Aims:

1. Orienting the students to basic principles of diffusion through membranes and different factors affecting percutaneous absorption.
2. Recognizing different methods used to enhance the skin penetration.
3. Knowing the composition of transdermal drug delivery systems.
4. Prepare drugs in different semisolid dosage forms as; creams, ointment, gels and pasts.

2- Course Learning Outcomes

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

Program K. element no.	Course K. element no.	Course K. element
1.1.1	1.1.1.1	List the basic principles of diffusion through the skin and transdermal drug delivery systems.
1.1.3	1.1.3.1	Interpret the different semisolid dosage forms as; creams, ointment, gels and pasts.
1.1.9	1.1.9.1	Recollect the knowledge about the different cosmetic products.

Domain 2: professional and ethical practice

Program K. element no.	Course K. element no.	Course K. element
2.2.4	2.2.4.1	Specify basic requirements fort and transdermal drug delivery systems.
2.2.5	2.2.5.1	Prepare and compound the different semisolid dosage forms as; creams, ointment, gels, pasts, and different cosmetic products.

Domain 4: personal practice

Program K. element no.	Course K. element no.	Course K. element
4.1.2	4.1.2.1	Identify problems and participate with other team members and apply effective time management skills.
4.3.2	4.3.2.1	Practice self-learning to improve professional skills

3- Course Contents

Week No.	Theoretical	Credit Hours
1	Anatomy and physiology of the skin	2
2	Topical and transdermal drug delivery systems	2
3	Diffusion through skin and percutaneous absorption	2
4	Transdermal drug delivery systems (TDDSs)	2
5	Topical medication (creams, ointment, gels, and pasts).	2
6	Skin-care products	2
7	Antiperspirants preparations	2
8	Color cosmetics	2
9	Shampoos (student presentations)	2
10	Dentifrices	2
11	Acne & Fragrance products (self-learning and student presentations)	2
12	Antidandruff preparations	2
13	Baby care products	2
14	Deodorants preparations	2
15	Compensatory and alternative lecture	2
16	Revision and quiz	2
17	**Final written and oral exam**	-
Week No.	**Practical**	**Credit hours**
1	Cold cream	1
2	Vanishing cream	1
3	Brushless Shaving cream	1
4	Brush Shaving cream & Beeswax Borax cleansing cream	1
5	Acne vulgaris cream	1
6	sunscreen cream	1
7	Deodorant preparations	1
8	Midterm exam	-
9	Whitfield's ointment	1
10	Sulphur ointment	1
11	Toothpaste ointment	1
12	Cosmetics: Rouge	1
13	Cosmetics: Liquid foundation	1
14	Antiperspirant creams	1
15	**Revision and activity**	1
16	**Practical Exam**	1

4- Teaching and Learning Methods:

Teaching and learning Methods		Weeks	K. elements to be addressed
4.1	Computer aided learning: a. Lectures using Data show, power Point presentations. b. Distance learning • Hybrid learning through MyMans "Mansoura university" as recorded video lectures • Interactive discussion through My Mans.	1-16	1.1.1.1, 1.1.3.1, 2.2.4.1 2.2.5.1
4.2	Advanced lecture (brainstorming)	1-16	1.1.1.1, 1.1.3.1, 2.2.4.1 2.2.5.1
4.3	Practical session using chemicals and laboratory equipment	1-12	2.2.4.1, 2.2.5.1
4.4	Self-learning	9&11	4.3.2.1/4.1.2.1
4.5	Class Activity /Problem – based learning	4,5	4.1.2.1
4.6	Presentations	9&11	4.1.2.1/4.3.2.1

5- Student Assessment:

a- Assessment Methods:

1-Written exam	**1.1.1.1, 1.1.3.1, 1.1.9.1**
2-Practical exam	**1.1.9.1, 2.2.5.1, 2.2.4.1**
3-Oral	**1.1.1.1, 1.1.3.1, 1.1.9.1, 4.1.2.1, 4.3.2.1**
4- Periodical (Mid-term exam) / Course work	**1.1.1.1, 1.1.3.1, 1.1.9.1**

b- Assessment schedule

Assessment 1	**Mid-term**	7-9th week
Assessment 2	**Practical**	16 th week
Assessment 3	**Written**	Starts at 17th
Assessment 4	**Oral**	Starts at 17th

c- Weighing of assessments

1	**Mid-term examination**	**15%**
2	**Practical examination & Semester work**	**25%**
3	**Final-term examination**	**50%**

4	**Oral examination**	**10%**
5	**Other types of assessment**	
Total		**100%**

6- Facilities required for teaching and learning

Classroom	Data show- Computers, Internet, Platform
Laboratory facilities	Water baths, glassware, chemicals, electronic balance
Library	Books and Pharmacopoeia

7- List of References

No	Reference	Type
1.	Electronic book “Pharmaceutic-1” prepared by staff members.	Course notes
2.	Recorded practical videos prepared by staff members	Videos on platform
4.	"Ansel’s Pharmaceutical Dosage Forms and Drug Delivery Systems" 10th Ed., Wolters Kluwer, Loyd Allen, Howard C. Ansel, Lippincott Williams and Wilkins, Philadelphia, (2013).	Essential Book
5.	"Remington’s: The science and practice of pharmacy" 22nd Ed., Pharmaceutical Press, Lippincott Williams and Wilkins, Philadelphia, (2012).	Essential Book
6.	"Aulton’s Pharmaceutics: The design and manufacture of medicines" 4th Ed., Michael E.Aulton, Kevin M.G. Taylor, (2013).	Essential Book
7.	http://www.sciencedirect.com http://www.google.com, http://www.pubmed.com https://www.ekb.eg	Websites

8- Matrix of knowledge and skills of the course

Matrix 1: Course content and course key elements

A. Theoretical

Course contents	Outcomes Domains / Key elements							
	Domain 1				Domain 2		Domain 4	
	1.1.1.1	1.1.3.1	1.1.9.1		2.2.4.1	2.2.5.1	4.1.2.1	4.3.2.1
Anatomy and physiology of the skin	√				√			
Topical and transdermal drug delivery systems	√				√			
Diffusion through skin and percutaneous absorption	√				√			
Transdermal drug delivery systems (TDDSs)	√				√		√	
Topical medication (creams, ointment, gels, and pasts).		√			√		√	
Skin-care products	√	√	√		√			
Antiperspirants products		√	√		√			
Color cosmetics			√			√		
Shampoos (student presentations)			√			√	√	√
Dentifrices		√	√			√		
Acne & Fragrance products (self-learning and student presentations)		√	√			√	√	√
Antidandruff preparations		√	√			√		
Baby care products		√	√			√		
Antiperspirant creams								

B. Practical

Course contents	Outcomes Domains / Key elements							
	Domain 1				Domain 2		Domain 4	
	1.1.1.1	1.1.3.1	1.1.9.1		2.2.4.1	2.2.5.1	4.1.2.1	4.3.2.1
Cold cream	√	√			√		√	
Vanishing cream	√	√			√		√	
Brushless Shaving cream	√	√			√			
Brush Shaving cream & Beeswax Borax cleansing cream	√	√			√			
Acne vulgaris cream & sunscreen cream	√	√			√			
Deodorant products	√	√			√			
Whitfield's ointment	√	√			√			
Sulphur ointment	√	√			√			
Toothpaste ointment			√			√	√	√
Cosmetics: Rouge			√			√		
Cosmetics: Liquid foundation			√			√	√	√
Antiperspirant products	√	√			√			

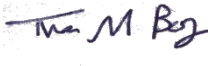
Matrix 2. Between course contents, methods of learning and assessment

B. Theoretical part

Theoretical course contents	Teaching and learning methods				Assessment methods			
	Developed Lecture	Hybrid learning	Problem solving &	Self-learning	Course Work	Practical	Written	Oral
Anatomy and physiology of the skin	√	√			√		√	√
Topical and transdermal drug delivery systems	√	√			√		√	√
Diffusion through skin and percutaneous absorption	√	√			√		√	√
Transdermal drug delivery systems (TDDSs)	√	√	√		√		√	√
Topical medication (creams, ointment, gels, and pasts).	√	√	√			√	√	√
Skin-care products	√	√				√	√	√
Antiperspirants products	√	√				√	√	√
Color cosmetics		√				√		
Shampoos (student presentations)	√	√		√		√	√	√
Dentifrices	√	√				√	√	√
Acne & Fragrance products (self-learning and student presentations)	√	√		√		√	√	√
Antidandruff preparations	√	√				√	√	√
Baby care products	√	√				√	√	√
Deodorants products	√	√				√	√	√

C. Practical

Theoretical course contents	Teaching and learning methods				Assessment methods			
	Hybrid learning	Lab sessions	Team-based learning	Problem solving	Course Work	Practical	Written	Oral
Cold cream	√	√	√	√	√	√		
Vanishing cream	√	√	√	√	√	√		
Brushless Shaving cream	√	√	√		√	√		
Brush Shaving cream & Beeswax Borax cleansing cream	√	√	√		√	√		
Acne vulgaris cream & sunscreen cream	√	√	√			√		
Deodorant products	√	√	√			√		
Whitfield's ointment	√	√	√			√		
Sulphur ointment	√	√	√					
Toothpaste ointment	√	√	√			√		
Cosmetics: Rouge	√	√	√			√		
Cosmetics: Liquid foundation	√	√	√					
Antiperspirant products	√	√	√			√		

Course Coordinator	**Prof. Dr. Thanaa Mohamed ELsaid Borg**
	
Head of Department	**Prof. Dr. Irhan Ibrahim Abu Hashim**
	

Date: 20/9/2023

بكالوريوس الصيدلة (فارم د – Pharm D)

Course Specification

Academic year: 2023/2024

Course name: Biostatistics	اسم المقرر : الاحصاء الحيوى
Academic Level: Second Level	المستوى الأكاديمي : الثانى
Scientific department: Pharmacology and Toxicology	القسم العلمي : الأدوية والسموم
Head of Department: Prof Dr Manar A Nader	رئيس القسم : ا.د/ منار احمد نادر
Course Coordinator: Dr. Marwa E. Abdelmageed	منسق المقرر: د/ مروه السيد عبدالمجيد

University	**Mansoura**
Faculty	**Pharmacy**
Department offering the course	**Pharmacology and Toxicology**
Department supervising the course	**Pharmacology and Toxicology**
Program on which the course is given	**Bachelor in Pharmacy- Pharm D**
Academic Level	**Level two, second semester, 2023/2024**
Date of course specification approval	**18th September 2023**

A. Basic Information: Course data:

Course Title	**Biostatistics**
Course Code	**PH-222**
Prerequisite	**——**
Teaching credit Hours: Lecture	**1**
Teaching Credit Hours: Practical/ tutorial	**——**
Total Credit Hours	**1**

B. Professional Information:

1. Course Aims:

This course enables the students to:

- make interpretation of any data using statistical analysis
- determine different methods of sampling
- handle the results of different experimental and research studies using suitable statistical techniques

2- Course k. elements:

Upon completing the course, the student will be able to dominate the following key elements

Domain 1- fundamental knowledge

Program K. element no.	Course K. element no.	Course K. element
1.1.1	1.1.1.1	Recognize the basic principles of biostatistics in biomedical science.
1.1.5	1.1.5.1	Collect and apply the principles and understanding of fundamental basic sciences as statistics.
1.1.6	1.1.6.1	Learn to analyze and interpret scientific literature findings to reach evidence-based approach.

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.2.4	2.2.4.1	Ensure quality control and quality assurance principles including biostatistical analysis as per the need of industry and future prospects in pharmacy practice.

Domain 3: Pharmaceutical Care

Program K. element no.	Course K. element no.	Course K. element
3.1.4	3.1.4.1	Understand basic concepts of probability and distribution such as in epidemiology.

Domain 4: Personal Practice:

Program K. element no.	Course K. element no.	Course K. element
4.1.2	**4.1.2.1**	Analyze data, identify problems and present solutions
4.2.2	**4.2.2.1**	Learn about softwares that can help to analyze data more efficiently.
4.3.2	**4.3.2.1**	Encourage practicing and self-learning approach.

3- Course Contents:

Week No.	Topics	Lecture credit Hours
1	Biostatistics introduction – types of variables	1
2	Descriptive statistics (tabular)	1
3	Descriptive statistics (diagrams)	1
4	Numerical description of data (mean, median, mode)	1
5	Measures of dispersion	1
6	Z Score and Coefficient of Variation	1
7	Probability and Statistical Hypothesis (Null and Alternative Hypotheses)	1
8	Paired t test	1
9	Unpaired t test	1
10	Chi Square test	1
11	One Way ANOVA	1
12	Regression analysis	1
13	Two-way ANOVA (part 1)	1
14	Two-way ANOVA (part 2) (self learning)	1
15	Compensatory and alternative lecture	1
16	Revision and quiz	1
Starting from 17	**Final written and oral exam**	-

4- Teaching and learning Methods:

	Teaching and learning Methods:	Week. No	K. elements to be addressed
4.1	Hybrid learning On line learning through My mans "Mansoura university "	1-16	1.1.1.1, 1.1.5.1, 1.1.6.1, 2.2.4.1, 3.1.4.1, 4.1.2.1, 4.3.2.1
4.2	Self-learning	14	4.1.2.1, 4.3.2.1
4.3	Class Activity: Group discussion offline and online.	1-16	1.1.1.1, 1.1.5.1, 1.1.6.1, 2.2.4.1, 3.1.4.1, 4.1.2.1, 4.3.2.1
4.4	Problem – based learning and brainstorming	1-14	1.1.1.1, 1.1.5.1, 1.1.6.1, 2.2.4.1, 3.1.4.1, 4.1.2.1, 4.3.2.1
4.5	Advanced lecture • Lectures using Data show, power Point presentations • Brain storming • Group discussion	1-16	1.1.1.1, 1.1.5.1, 1.1.6.1, 2.2.4.1, 3.1.4.1, 4.1.2.1, 4.3.2.1

5- Student Assessment:

a- Assessment Methods:

Assessment Methods	K elements to be assessed
1-Written exam	1.1.1.1, 1.1.5.1, 1.1.6.1, 2.2.4.1, 3.1.4.1, 4.1.2.1, 4.3.2.1
2-Oral	1.1.1.1, 1.1.6.1, 2.1.1.1, 2.2.4.1, 3.1.4.1, 4.2.2.1
3- Periodical (Mid-term exam) / Course work	1.1.1.1, 1.1.5.1, 1.1.6.1, 2.2.4.1, 2.2.3.1, 3.1.4.1

b. Assessment schedule

Assessment 1	Periodical (Mid-term exam) / Course work	7^{th} - 9^{th} week
Assessment 2	Written exam	Start from 17^{th} week
Assessment 3	Oral exam	Start from 17^{th} week

a. Weighing of assessments

1	Periodical (Mid-term) exam / Course work	15%
3	Final-term written examination	75%
4	Oral examination	10%
Total		100%

6- Facilities required for teaching and learning

-Class room	Data show- Computers, Internet.

7- List of References

No	Reference	Type
1.	Electronic book prepared by staff members	**Course notes**
2.	Recorded videos prepared by staff members	**Videos on platform**
3.	Essential Statistics for the Pharmaceutical Sciences, 2nd Edition, Philip Rowe, 2015 Wiley-Blackwell.	**Essential textbook**
4.	Medical Statistics at a Glance, 4th Edition, Aviva Petrie, Caroline Sabin, 2019 Wiley-Blackwell.	**Essential textbook**
5.	http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg	**websites**

8- Matrix of course content versus course k. elements:

Course contents / K. elements	Domain 1				Domain 2		Domain 3		Domain 4		
	1.1.1.1	1.1.5.1	1.1.6.1		2.2.4.1		3.1.4.1		4.1.2.1	4.2.2.1	4.3.2.1
Biostatistics introduction – types of variables	✓										
Descriptive statistics (tubular)		✓	✓								
Descriptive statistics (diagrams)			✓		✓						
Numerical description of data (mean, median, mode)	✓		✓		✓						
Measures of dispersion			✓		✓		✓				
Z Score and Coefficient of Variation		✓	✓		✓		✓				
Probability and Statistical Hypothesis (Null and Alternative Hypotheses)		✓	✓		✓		✓				
Paired t test		✓	✓		✓		✓		✓		
Unpaired t test		✓	✓		✓		✓				
Chi Square		✓	✓		✓		✓				
One Way ANOVA		✓	✓		✓		✓				
Regression analysis									✓	✓	✓
Two-way ANOVA (part 1)									✓	✓	✓
Two-way ANOVA (part 2) (self learning)									✓	✓	✓

9- Matrix between course contents, methods of learning and assessment:

A) Theoretical Part:									
Course Contents		**Teaching and Learning Methods**					**Assessment methods**		
		Advanced lecture	**Hybrid learning**	Problem solving	Self-learning	**Class activity**	Course Work (midterm)	Written	Oral
Biostatistics introduction – types of variables		√	√	√		√	√	√	√
Descriptive statistics (tubular)		√	√	√		√	√	√	√
Descriptive statistics (diagrams)		√	√	√		√	√	√	√
Numerical description of data (mean, median, mode)		√	√	√		√	√	√	√
Measures of dispersion		√	√	√		√		√	√
Z Score and Coefficient of Variation		√	√	√		√		√	√
Probability and Statistical Hypothesis (Null and Alternative Hypotheses)		√	√	√				√	√
Paired t test		√	√	√		√		√	√
Unpaired t test		√	√	√		√		√	√
Chi Square		√	√	√		√		√	√
One Way ANOVA		√	√	√		√		√	√
Regression analysis		√	√	√		√		√	√

Two-way ANOVA (part 1)					√			√	√
Two-way ANOVA (part 2) (self learning)					√			√	√

Course Coordinator	**Dr. Marwa Elsayed Abdelmageed**
Head of Department	**Prof. Dr. Manar A Nader**

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