Level 2

Semester (3)

Course code	Course Title
PT 213	Pharmaceutics
PG 213	Pharmacognosy (2)
PA 213	Pharmaceutical Analytical Chemistry (1)
PO 213	Pharmaceutical Organic Chemistry (3)
PH 212	Physiology

Semester (4)

Course code	Course Title
PT 224	Pharmaceutical Dosage Forms (1)
PG 224	Pharmacognosy (3)
PA 224	Pharmaceutical Analytical Chemistry (2)
PO 224	Heterocyclic chemistry
PB 221	Biochemistry (1)
PH 223	Pathophysiology

Course Specification: Pharmaceutics	Second Level

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmaceutics
Course title: **Pharmaceutics**
Course code: **PT 213**

Program on which the course is given	B. Pharm
Academic Level	Second Level, First semester, 2023-2024
Date of course specification approval	20th september 2023

1. Basic Information: Course data:

Course title:	**Pharmaceutics**	**Code: PT 213**
Specialization:	**Pharmaceutical**	
Prerequisite:	**Registration**	
Teaching Hours:	**Lecture: 2**	**Practical: 1**
Number of units: (credit hours)	**3**	

2. Course Aims:

2.1. Orienting the students to the different aspects of pharmaceutical calculations, formulations, compounding, preservation and storage of liquid preparations.
2.2. Recognizing different types of liquid preparations.
2.3. Knowing applications of different liquid formulations in pharmacy.

3- 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**	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.

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 the processes of liquid dosage forms formulations, including incompatibilities.

DOMAIN 4: PERSONAL PRACTICE

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

4. Contents:

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1.	Pharmaceutical calculations	2	2	
2	Suspensions definition ,stability	2	2	
3	Suspensions preparation and characterization	2	2	
4.	Colloids definition and separation	2	2	
5	Colloids types and properties	2	2	
6	Emulsions definition and types	2	2	
7	Emulsions preparation and app;ication	2	2	
8	Pharmaceutical solutions definition and types	2	2	
9	Pharmaceutical solutions and water	2	2	
10	Syrups	2	2	
11.	Elixir	2	2	

12	Dry mixture and self learning	2	2	
13	Solutions instilled into cavities	2	2	
14	revision and quiz	2	2	
15	final written exam	-	-	

Practical topics				
Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1.	Pharmaceutical calculations	2		1
2	Preparation of Simple Mixture	2		1
3	preparation of internal solutions	2		1
4	preparation of external solutions	2		1
5	preparation of syrup	2		1
6	preparation of elixir	2		1
7.	Preparation of Suspension	2		1
8.	**Mid-term Exam**	-		-
9	Preparation of diffusible solids Suspension	4		2
10	Preparation of indiffusible solids Suspension			
11.	Preparation of liquid paraffin Emulsion	2		1
12	Preparation of castor oil Emulsion	2		1
13.	Preparation of medicated Emulsion	2		1
14.	Practical Exam			

5. Teaching and learning Methods:

5.1	Computer aided learning: a. On line learning through My mans "Mansoura university "as recorded – video lectures b. Inter active discussion through My Mans c. Lectures using Data show, PowerPoint presentations
5.2	Self-learning
5.3	Formative Assignments
5.4	Tutorial

6. Student Assessment:

a. Assessment methods

1. Mid Term exam	1.1.1.1, 1.1.3.1, 2.2.4.1
2.Practical exam	2.2.4.1, 4.1.2.1, 4.3.2.1
3.Final Written exam	1.1.1.1, 1.1.3.1, 2.2.4.1

b.Assessment schedule

Assessment 1	Practical	14th week
Assessment 2	Mid-term	8th week
Assessment 3	Oral	15th week
Assessment 4	Written	5th week

c. Weighting of assessments

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

7. List of References

N0.	Reference	type
1	Theoretical course Notes “Pharmaceutics” prepared by staff members	Course notes
2	"Ansel’s Pharmaceutical Dosage Forms and Drug Delivery Systems" 10th Ed., Wolters Kluwer, Loyd Allen, Howard C. Ansel, Lippincott Williams and Wilkins, Philadelphia, (2013).	Book

3	"Remington's: The science and practice of pharmacy" 23rd Ed., Pharmaceutical Press, Lippincott Williams and Wilkins, Philadelphia, (2020).	Book
4	"Aulton's Pharmaceutics: The design and manufacture of medicines" 4th Ed., Michael E.Aulton, Kevin M.G. Taylor, (2013).	Book
5	http://www.sciencedirect.com	Website
6	http://www.google.com	Website
7	http://www.pubmed.com	Website

8. Matrix of knowledge and skills of the course

Course contents	Study Week	Course Key Elements				
		Domain: 1		Domain: 2	Domain: 4	
		1.1.1.1	1.1.3.1	2.2.4.1	4.1.2.1	4.3.2.1
Pharmaceutical calculations	1.	√	√			
Suspensions definition ,stability	2	√	√			√
Suspensions preparation and characterization	3	√	√			√
Colloids definition and separation	4.	√	√			√
Colloids types and properties	5.	√	√	√	√	
Emulsions definition and types	6.	√	√		√	
Emulsions preparation and app;ication	7	√	√			
Pharmaceutical solutions definition and types	8	√	√	√	√	
Pharmaceutical solutions and water	9	√	√	√	√	
Syrups	10	√	√	√	√	
Elixir	11	√	√	√	√	
Dry mixture	12	√	√			
Solutions instilled into cavities	13	√	√	√	√	√

Course Coordinator:	Prof. Dr. Galal Mahmoud Abdelghani
Head of Department:	Prof Dr. Irhan Ibrahim Abu Hashim

20/9/2023

Mansoura University
Faculty of Pharmacy
Quality Assurance Unit
Credit Hours Program
Course Specification
2023- 2024

المستوى الثانى

توصيف مقررPharmacognosy-2

University: Mansoura University (MU)
Faculty : Pharmacy
Department : Pharmacognosy
Course title: Pharmacognosy -2
Course code: **PG213**

Program on which the course is given	B. Pharm
Academic Level	Second Level, First semester
Date of course specification approval	9/2023

1- Basic Information : Course data :

Course title:	Pharmacognosy -2	**Code: PG213**	
Specialization:	**pharmaceutical sciences**		
Prerequisite: Registration			
Teaching Hours:	**Lecture: 2**	**Practical: 1**	
Number of units: (credit hours)	**3**		

2- Course Aims:

1. Provide the student with the knowledge and skills related to drugs from different plant origin such as seeds, fruits and herbs which reputed to be used in folk medicine and have curative values.

2. Prepare the student to practical aspects and identification of natural medicinal drugs.

3- 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. elements
1.1.1	1.1.1.1	Outline the basic knowledge of macroscopical and microscopical characters of some medicinal leaves, flowers, barks and seeds.
1.1.2	1.1.2.1	List the appropriate geographical and botanical origin of the studied medicinal plants
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 leaves, flowers, barks and seeds.
1.1.4	1.1.4.1	Illustrate main active constituents of the studied medicinal plants as well as their therapeutic effects and safety

Domain 2: Professional and Ethical Practice

Program K. element no	Course K. element no	Course K. elements
2.2.1	2.2.1.1	Analyze and evaluate the natural pharmaceutical materials from different origins as leaves, flowers, barks and seeds.
2.2.2	2.2.2.1	Conduct principles of quality control guidelines related to pharmaceutical industry of the herbal products from different sources in addition to possible interactions with some synthetic prescribed medications.
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 K. element no	Course K. element no	Course K. elements
(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 regarding in the field of health care and medicinal plants regarding the studied topics.

4- Contents :-

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1-3.	Introduction to seeds, medicinal seeds as Nux vomica, Linseed, Strophanthus, Foenugreek, Black mustard, Cardamom, .	6	6	
4.	Medicinal unofficial seeds (e.g. Areca, Coffea rosta, Calabar bean, Ricinus, Cocoa seeds)	2	2	
5-8.	Introduction to fruits, medicinal fruits as Umbelliferous fruits: Fennel, Anise, Caraway, Coriander, Ammi visnaga, Ammi majus, Capsicum, Colocynth, Senna fruit, Bitter orange peel, Lemon	8	8	
9	Medicinal unofficial fruits (e.g. Cummin, Dill, Hemlock, black pepper and Cubebs).	2	2	
10-11	Medicinal herbs as Lobelia, Mentha, Thymus, Lavander	4	4	
12	Hyoscyamus, Catharanthus, Cannabis,	2	2	
13	Ephedra and Ergot	2	2	
14	Revision & Quiz	2	2	
15	**Week 15 Final written & oral**			

	Practical topics			
1	Introduction of medicinal Fruits and Umbelliferous fruits.	2		1
2	Medicinal Fruits such as Umbelliferous fruits (Anise, Fennel)	2		1
3	Coriander, Ammi visnaga, Ammi majus, Capsicum, Colocynth fruit.	2		1
4	Introduction of medicinal herbs and some example of it such as (Ephedra, lobelia, cannabis, ergot, menthe, thymus, hyoscynmus…….etc.)	2		1
5	Introduction of subterranean drugs and some medicinal subterranean drugs such as Ginseng root and Liquorice root.	2		1
6	Medicinal subterranean drugs such as Rhubarb root & Rhizome, Ginger rhizome, Curcuma rhizome, Galangal rhizome and Jalap root.	2		1
7	Medicinal unorganized drug such as gums (gum tragacanth and gum Arabic), dried extracts (gelatin and agar-agar).	2		1
8	**Week 8 Mid-term**			
9	Resin and resin combinations such as colophony	2		1
10	Myrrh & Asafoetida	2		1
11	Case study	2		1
12	Case study	2		1
13	**Revision & Sheet**	2		1
14	**Week 14 Practical exam**			

5- Teaching and learning Methods:

5.1	**Computer aided learning:** **a. On line learning through my mans "Mansoura university "as recorded – video lectures**

	b. Inter active discussion through My Mans
5.2	Practical session using laboratory equipment (microscope and glass wares)
5.3	Research assignments
5.4	Case study
5.5	Discussion session

6- Student Assessment:

a- Assessment methods:

1-Written exam	To assess understanding, intellectual, professional
2-Practical exam	To assess professional and practical skills
3-Oral	To assess Knowledge, understanding, intellectual skills, general skills and confidence
4-Quizzes	To assess Knowledge, understanding and intellectual skills
5-Case study	To assess the skills of problem-solving and date presentation

b- Assessment schedule

Assessment 1	Periodical exam	8thweek
Assessment 2	Practical exam	14thweek
Assessment 3	Oral exam	15thweek
Assessment 4	Written exam	15thweek

c- Weighting of assessments

1	Mid-term examination	10 %
2	Final-term examination	50 %
3	Oral examination	15 %
4	Practical examination & Semester work	25 %
5	Other types of assessment	0
Total		100%

7 - List of References

N0.	Reference	type

1	Evans, W.C. "Trease and Evans Pharmacognosy" Saunders, London, New York, Sydney, Toronto, 2012	Book
2	Jackson, B.P. and Snowdon, D.W. "Powdered vegetable drugs" Stanley Thornes LTd., London, 2017.	Book
3	Pharmacognosy 2 by staff members of Pharmacognosy.	Course notes

8- Matrix of knowledge and skills of the course

Course contents	Study Week	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	2.3.1.1	4.1.1.1	4.2.1.1
Introduction to seeds, medicinal seeds as Nux vomica, Linseed, Strophanthus, Foenugreek, Black mustard, Cardamom, .	1-3.	√	√	√	√					√
Medicinal unofficial seeds (e.g. Areca, Coffea rosta, Calabar bean, Ricinus, Cocoa seeds)	4.	√	√	√	√					√
Introduction to fruits, medicinal fruits as Umbelliferous fruits: Fennel,	5-8.	√	√	√	√		√			√

Anise, Caraway, Coriander, Ammi visnaga, Ammi majus, Capsicum, Colocynth, Senna fruit, Bitter orange peel, Lemon										
Medicinal unofficial fruits (e.g. Cummin, Dill, Hemlock, black pepper and Cubebs).	**9.**	√	√	√		√		√		√
Medicinal herbs as Lobelia, Mentha, Thymus, Lavander	**10-11.**		√	√	√	√		√		√
Hyoscyamus, Catharanthus, Cannabis,	**12.**		√	√	√	√		√		√
Ephedra and Ergot	**13.**		√	√	√		√	√	√	√
Revision & Quiz	**14**		√	√	√		√	√	√	√

Course Coordinator :	**Prof. Dr. Mona G. Zaghloul**
Head of Department	**Prof. Mahmoud Fahmi Elsebai**

Second Level

Course Specification Pharmaceutical Analytical Chemistry 1

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmaceutical Analytical Chemistry
Course title: Pharmaceutical Analytical Chemistry 1
Course code: PA213

Program on which the course is given	B. Pharm
Academic Level	Second Level, First semester,2023-2024
Date of course specification approval	10/09/2023

1. Basic Information: Course data:

Course title:	**Pharmaceutical Analytical Chemistry 1**	**Code: PA213**
Specialization:	**Pharmaceutical**	
Prerequisite:	**Registration**	
Teaching Hours:	**Lecture:2**	**Practical:1**
Number of units: (credit hours)	**3**	

2. Course Aims:

2.1. Recall the basic principles of quantitative chemical methods of analysis including; acid-base, gravimetric, precipitimetric and complexometric methods of analysis.

3- 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 acid-base, non-aqueous, complexometric and precipitation methods of analysis.

(1.1.3)	(1.1.3.1)	Combine the principles of different analytical techniques for the estimation of chemicals and pharmaceutical compounds.

Domain 2: Professional and Ethical Practice:

Program K. elements no	Course K. elements	Course K. elements
(2.2.1)	(2.2.1.1)	Select and apply different analytical 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 and water resources.
(2.2.4)	(2.2.4.1)	Explain the principles of pharmaceutical calculations and their applications to pharmaceutical analysis.
(2.3.1)	(2.3.1.1)	Apply proper handling and disposal of chemical compounds.
(2.3.2)	(2.3.2.1)	Choose best practices and adhere to high ethical and safety standards for management of chemical compounds.

Domain 4: Personal Practice:

Program K. elements no	Course K. elements no	Course K. elements
(4.1.1)	(4.1.1.1)	Share decision-making activities with other pharmacy team members and nonpharmacy team members and apply effective 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)	Apply artificial technology whenever possible to present relevant information.
(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

4. Contents:

Week No	Topics	No.of hours	Lecture credit hours	Practical credit hours
1.	Acid- Base titrations; introduction, theory of acids and bases,	2	2 hours	
2.	pH value and its significance, pH of different solutions, buffers,	2	2 hours	
3.	Acid- base indicators, problems, types of acid- base titrations	2	2 hours	
4.	Acid-base titration curves	2	2 hours	
5.	Applications of acid- Base titration.	2	2 hours	
6.	Non aqueous titrations.	2	2 hours	
7.	Precipitation titration; introduction, solubility product constant (Ksp), factors affecting solubility of PPT, precipitation titration curve	2	2 hours	
8.	Methods of precipitation titration and application.	2	2 hours	
9.	Complexometric titration; introduction	2	2 hours	
10.	EDTA titration, metallochromic indicators	2	2 hours	
11.	EDTA titration curve, types of EDTA titrations	2	2 hours	
12.	EDTA selectivity, analysis of mixtures of metal ions.	2	2 hours	
13	Gravimetric analysis	2	2 hours	
14	Revision and quiz	2	2 hours	
15.	**Final written & oral exam**			
	Practical topics			
Week No	**Topics**	**No. of hours**	**Lecture credit hours**	**Practical credit hours**
1.	-Handling rules. -Determination of HCl.	2		1hour
2.	-Assay of NH_4Cl (Back titration). - Assay of (NH_4Cl & HCl) mixture.	2		1hour
3.	1-Assay of HCl/HAC mix.	2		1 hour

4.	Assay of borax.	2		1hour
5.	Determination of Na_2CO_3 / NaOH mixture.	2		1hour
6.	Determination of Na_2CO_3 / $NaHCO_3$ mixture.	2		1 hour
7.	Determination of NaCl (Mohr's method).	2		1hour
8.	**Periodical Exam**			
9.	Determination of NaBr (Volhard's method).	2		1hour
10.	Determination of NaCl (Volhard's method).	2		1 hour
11.	Determination of potash alum Al^{3+}.	2		1 hour
12.	Determination of Ca^{2+} Determination of Mg^{2+}	2		1 hour
13.	Determination of Ca^{2+}/Mg^{2+} mixture.	2		1 hour
14.	Final practical exam			

5. Teaching and learning Methods:

5.1	Lectures using whiteboard
5.2	Lectures using Datashow, PowerPoint presentations
5.3	Laboratory with equipments, chemicals and reagents.

6. Student Assessment:

a- Assessment methods

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	2.2.1.1, 2.2.3.1, 2.2.4.1, 2.3.1.1, 2.3.2.1
3. Oral	4.1.2.1, 1.1.1.1, 1.1.3.1
4. Periodical	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	Practical	14th week
Assessment 2	Periodical	8thweek
Assessment 3	Oral	15thweek
Assessment 4	Written	15thweek

c- Weighting of assessments

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

7. List of References

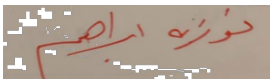
No	Reference	Type
1.	Practical course notes prepared by the department staff members	Course notes
2.	Lecture notes and practical course notes prepared by the department staff members.	Course notes
3.	Fundamentals of Analytical Chemistry , Douglas A.; Skoog; Donald M., West, F.James Holler, Stanely, R.Crouch Thomson, Australia 8th ed. (2004).	Book
4.	Quantitative Chemical Analysis, Daniel C. Harris, 6th ed., W.H. Freeman and Company, New York (2003).	Book
5.	Vogel,s Textbook of Quanitative chemical Analysis, J. Mendham, M.A, MSc, C. Chem, M. RSC, 6th ed., India (2004).	Book
6.	Pharmaceutical Analytical Chemistry, Quantitative Analysis, Amer, M.M. Faculty of Pharmacy, Cairo University.	Book

8. Matrix of knowledge and skills of the course

Course contents	Study Week	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	4.1.2.1	4.3.1.1

Acid- Base titrations; introduction, theory of acids and bases	1	√	√	√	√	√	√	√		
pH value and its significance, pH of different solutions, buffers	2		√		√					
Acid- base indicators, problems, types of acid-base titrations	3		√			√	√	√		
Acid-base titration curves	4	√	√	√						
Applications of acid- Base titration.	5	√	√	√					√	
Non aqueous titrations.	6	√	√	√	√	√	√	√	√	√
Precipitation titration; introduction, solubility product constant (Ksp), factors affecting solubility of PPT, precipitation titration curve	7									
Methods of precipitation titration and application.	8	√	√	√	√	√	√	√	√	√
Complexometric titration; introduction	9	√	√	√	√	√	√	√	√	√
EDTA titration,	10	√	√	√	√	√	√	√	√	√

metallochromic indicators										
EDTA titration curve, types of EDTA titrations	**11**			√	√	√	√	√	√	√
EDTA selectivity, analysis of mixtures of metal ions.	**12**	√	√	√	√	√				
Gravimetric analysis	**13**	√	√	√	√	√	√	√	√	√
Revision and quiz	**14**							√	√	√

Course Coordinator:	**Prof. Dr. Fawzia Ahmed Ibrahim** 
Head of Department:	**Prof. Dr. Jenny Jeehan Nasr** 

Second Level

Course specification
Pharmaceutical Organic Chemistry (3)

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmaceutical Organic Chemistry
Course title: Pharmaceutical Organic Chemistry (3)
Course code: **PO 213**

Program on which the course is given	B. Pharm
Academic Level	Second Level, First semester
Date of course specification approval	20/9/2023

1. Basic Information: Course data:

Course title:	**Pharmaceutical Organic Chemistry (3)**	**Code: PO 213**
Specialization:	**Pharmaceutical sciences**	
Prerequisite:	**Registration**	
Teaching Hours:	**Lecture: 2**	**Practical: 1**
Number of units: (credit hours)	**3**	

2. Course Aims:

2.1. Gain an understanding of the basic principles of organic chemistry.
2.2. Have a good idea about stereo-chemistry and organic reactions to help in understanding of the next applied sciences.
2.3. Apply the chemistry of many bioorganic compounds in the biological and natural product fields

3- 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 the basic of nomenclature of heterocyclic compounds.
	1.1.1.2	Recognize the physical and chemical properties of different heterocyclic rings.
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.
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 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 K. element no.	Course K. element no.	Course K. element
2.2.1	2.2.1.1	Design, explain the preparation of pharmaceutical organic heterocycles from different sources.
2.5.3	2.5.3.1	Employ different scientific rules of research for synthesis of simple organic compounds and drugs.

DOMAIN 4: PERSONAL PRACTICE

Program K. element no.	Course K. element no.	Course K. element
4.1.1	4.1.1.1	Apply different activities in team work projects and enhance time management abilities.

4. Contents:

Week No	Topics	No. of hours	Lecture credit hours
1.	Aliphatic And Aromatic Aldehydes & Ketones	2	2 hours
2-3	Aliphatic And Aromatic Carboxylic Acids , Halo Acids , Monobasic Hydroxy Acids , Unsaturated Monocarboxylic Acids & Saturated Dicarboxylic Acids	4	4 hours
4.	Aliphatic And Aromatic Carboxylic Acid Derivatives: Esters, Thioesters, Amides & Lactams	2	2 hours
5.	Aliphatic And Aromatic Acid Halides And Acid Anhydrides	2	2 hours
6.	Aliphatic And Aromatic Nitro Compounds	2	2 hours
7-8	Amines	2	2 hours
9-10.	Carbohydrates	4	4 hours
11	Amino Acids	4	4 hours
12	Proteins	4	4 hours
13.	Peptides	4	4 hours
14.	Revision/quiz	2	2 hours
15.	**Final written & oral**	-	-
Week No	**Topics**	**No. of hours**	**Practical credit hours**
1.	Aldehydes	2	1 hour
2.	Ketones	2	1 hour
3.	Armoatic acids	2	1 hour
4.	Salts of aromatic acids	2	1 hour

5.	Esters and Amides	2	1 hour
6.	Aromatic amines and their salts	2	1 hour
7.	Anilides	2	1 hour
8.	**Mid-term Exam**		
9.	Carbohydrates (Part 1)	2	1 hour
10.	Carbohydrates (Part 2)	2	1 hour
11.	General Scheme of identification (Solid)	2	1 hour
12.	General Scheme of identification (Liquid)	2	1 hour
13.	Identification of unknown samples (Solid)	2	1 hour
14.	**Practical exam**	2	1 hour

5. Teaching and learning Methods:

5.1	**Computer aided learning:** **a. On line learning through my mans "Mansoura university "as recorded – video lectures** **b. Inter active discussion through My Mans** **c. power point presentation**
5.2	**Self-learning**
5.3	**Computer aided learning: Group discussion**
5.4	**Problem – based learning and brainstorming**
5.5	**Practical session using laboratory equipment (Microscopes and glass wares), and tutorials**

6. Student Assessment:

a- Assessment methods

1. Quizzes	**To assess understanding, intellectual and professional skills**
2. Oral exam	**To assess knowledge, understanding, intellectual skills, general skills and confidence**
3. Practical exam	**To assess professional and practical skills**
4. Lab. reports	**To assess the skills of problem-solving and date presentation**
5. Written exam	**To assess understanding, intellectual and professional skills**

b- Assessment schedule

Assessment 1	Periodical Exam	8th week
Assessment 3	Practical	14th week
Assessment 4	Written	Start from 15th week
Assessment 5	Oral	Start from 15th week

c- Weighting of assessments

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

7. List of References

No	Reference	Type
1.	Practical course notes and lectures notes prepared by the department staff members	Course notes
3.	Solomons, G.T., Fryhle, C.B., Snyder, S.A.. Organic Chemistry. Ed. 12th, John Wiley & Sons, Global edition,	Book
4.	Carey, F.A., Giuliano, R.M., Allison, N., Bane, S.. Organic Chemistry. Ed. 11th, New York, NY: McGraw-Hill, 2020.	Book
5.	Engel, R.G., Pavia, D.L., Lampman, G. M., Kriz, G.S.. A microscale approach to organic laboratory techniques. Ed. 6th, Boston, MA: Cengage Learning, 2018.	Book
6.	Practical Org. Chem., A.I.Vogel, Longman, London	Book

8. Matrix of knowledge and skills of the course

Course contents	Study Week	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
Aliphatic And Aromatic Aldehydes & Ketones	1.	√		√	√	√	√	√			
Aliphatic And Aromatic Carboxylic Acids , Halo Acids , Monobasic Hydroxy Acids , Unsaturated Monocarboxylic Acids & Saturated Dicarboxylic Acids	2-3	√	√	√	√	√	√	√			
Aliphatic And Aromatic Carboxylic Acid Derivatives: Esters, Thioesters, Amides & Lactams	4.	√		√	√	√	√		√	√	
Aliphatic And Aromatic Acid Halides And Acid Anhydrides	5.	√	√			√	√		√	√	
Aliphatic And Aromatic Nitro Compounds	6.	√	√						√	√	√
Amines	7.	√	√			√	√		√	√	√
Amines	8.	√	√			√	√		√	√	√
Carbohydrates	9.	√	√			√	√		√	√	√
Carbohydrates	10	√	√			√	√		√	√	√
Amino Acids	11	√	√	√	√	√	√	√	√	√	√
Protein	12	√	√	√	√	√	√	√	√	√	√
Peptides	13			√	√	√	√	√	√	√	√

Revision/Quiz	14			√	√	√	√	√	√	√	√

Course Coordinator:	**Hassan M.Eissa**
Head of Department:	**Shahenda Metwally EL-Messery**

Level (2)	Physiology (MH212)

University: Mansoura

Faculty : Pharmacy

Department : Pharmacology & Toxicology

Course title: Physiology (MH212)

Program on which the course is given	Bachelor of Pharmacy (Credit Hour System)
Academic Level	Level (2); Semester (1)
Date of course specification approval	September 2023

1- Basic Information : Course data :

Course title:	Physiology	**Code**	PH212
Specialization:	Medical		
Prerequisite: Registration			
Teaching Hours:	**Lecture:** 2	**Practical:**	1
Number of units: (credit hours)	3		

2- Course Aims:

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

3. Course K. Elelments

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

DOMAIN 1- FUNDAMENTAL KNOWLEDGE

(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

(2.1.3)	**2.1.3.1**	Assess suitable professional limits and take responsibility and accountability within healthcare team

DOMAIN 3: PHARMACEUTICAL CARE

(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

(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.

4- Contents:-

Week No	Topics	No.of hours
1	Introduction to Physiology	2
2,3	Physiology of the nervous system	2
4,5	Physiology of the cardiovascular system	2
6,7	Physiology of digestive system	2

8,9	Physiology of respiratory system	2
10,11	Physiology of the excretory system.	2
12,13	Physiology of the endocrine system.	2
14	Revision and quiz	2
15	**Final written exam**	
	Practical topics	
1	Transport across cell membranes	1
2	Action potential propagation and review case	1
3	Physiology of skeletal muscles	1
4	Physiology of smooth muscles	1
5	Human Electrocardiography	1
6	Assessment of Human Blood Pressure	1
7	Blood and Blood groups	1
8	Mid term	
9	Disorders of Adrenal Gland 1	1
10	Disorders of Adrenal Gland 2	1
11	Disorders of endocrine System 1	1
12	Disorders of endocrine System 2	1
13	Disorders of endocrine System 3	1
14	Practical Exam	1

5- Teaching and learning methods:

Teaching and learning Methods	
1	**Advanced lectures:** Lectures using Data show, power Point presentations •

	Brain storming • Group discussion •
2	Hybrid learning: Hybrid Online learning through my mans "Mansoura university "as recorded – video lectures
3	Self-learning.
4	Practical session using laboratory equipment and/ or tutorials.
5	**collaborative learning: research Project**

6- Student Assessment:

1. **Assessment methods**:

Assessment Methods	Key elements to be assessed
1- Periodical (Mid-term exam)	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

2. **Assessment schedule**

Assessment 1	**Mid-term**	**8thweek**
Assessment 2	**Practical**	**14thweek**
Assessment 3	**Final Written exam**	**15thweek**

3. **Weighting of assessments**

1	**Mid-term examination**	**10 %**
2	**Final-term examination**	**65 %**
4	**Practical examination & Semester work**	**25 %**
Total		**100%**

7 - List of References

S	Item	Type
1	• Physiology; Linda S. Costanzo. Elsevier, 7th edition, 2021. Guyton and Hall Textbook of Medical Physiology; John E. Hall. Elsevier, 13th edition, 2015.	Books
2	Lectures Handout	Course notes

8- Matrix of knowledge and skills of the course

Course contents	Study Week	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	4.1.2.1	4.2.1.1
Introduction to Physiology	1	√	√		√			
Physiology of the nervous system	2,3	√	√		√			
Physiology of the cardiovascular system	4,5	√	√	√	√			
Physiology of digestive	6,7	√	√	√		√	√	√

system								
Physiology of respiratory system	**8,9**	√	√	√		√	√	√
Physiology of the excretory system.	**10,11**	√	√	√		√	√	√
Physiology of the endocrine system.	**12,13**	√	√	√		√	√	√

Course Coordinator:	**Prof. Dr. Manar A. Nader**
Head of department	**Prof. Dr. Manar A. Nader**

Course Specification Pharmaceutical Dosage Forms (1)	Second Level

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmaceutics
Course title: **Pharmaceutical Dosage Forms (1)**
Course code: PT 224

Program on which the course is given	B. Pharm
Academic Level	Second Level, Second semester, 2023-2024
Date of course specification approval	20th september 2023

1. Basic Information: Course data:

Course title:	**Pharmaceutical Dosage Forms (1)**	**Code: PT 224**
Specialization:	**Pharmaceutical**	
Prerequisite:	**Registration**	
Teaching Hours:	**Lecture: 2**	**Practical: 1**
Number of units: (credit hours)	**3**	

2. Course Aims:

2.1. Understand the advantages and disadvantages of suppository drug delivery, microcapsules and solid dosage forms.
2.2. List the physiologic and physicochemical factors influencing the drug absorption from rectal suppository administration.
2.3. Cover the principles of microencapsulation.
2.4. Understand the basic principles and techniques of compounding and dispensing different pharmaceutical dosage forms such as rectal dosage forms (suppositories), tablets and capsules.

3- 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.

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 for and transdermal drug delivery systems.

DOMAIN 4: PERSONAL PRACTICE

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

4. Contents:

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1.	Tablets(def., uses, advantages, disadvantages)	2	2	
2	Tablets manufacture	2	2	
3	Tablets coating	2	2	
4	Quality control tests of tablets	2	2	
5	Capsules(def., uses, advantages, disadvantages)	2	2	
6	Capsules types	2	2	
7	Capsules manufacture	2	2	
8	Microencapsulation(def., uses, advantages, disadvantages)	2	2	
9	Method of microencapsulation preparation	2	2	

10	Rectal preparations	2	2	
11	Suppositories: def., uses	2	2	
12	Types of suppository bases	2	2	
13	Advantages and disadvantages of suppositories	2	2	
14	Evaluation of suppositories and self leaning	2	2	
15	revision and quiz	2	2	
16	final written exam	-	-	

Practical topics

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1.	Tablet triturates (D.V.)	2		1
2	Preparation of plain tablets	2		1
3	Preparation of prescribed tablets	2		1
4	Calibration of suppository mold	2		1
5	Determination of correction factor Determination of mold validity	2		1
6	Determination of the D.V. for suppository	2		1
7	Preparation of plain suppository	2		1
8.	midterm exam	-		-
9	Preparation of the medicated suppository solid drug (zno)	2		1
10	ZNO and liquid extract of hamamelis fatty base suppositories	2		1
11	Viscid liquid (Ichthamol) using fatty base	2		1
12	Ichthamol	2		1

13	Preparation of plain glycerogelatin suppositories	2		1
14	hamamelis glycerogelatin suppositories	2		1
15	Practical Exam			

5. Teaching and learning Methods:

5.1	Computer aided learning: a. On line learning through My mans "Mansoura university "as recorded – video lectures b. Inter active discussion through My Mans c. Lectures using Data show, PowerPoint presentations
5.2	Self-learning
5.3	Formative Assignments
5.4	Tutorial

6. Student Assessment:

a. Assessment methods

1.Mid Term exam	1.1.1.1, 1.1.3.1, 2.2.4.1
2.Practical exam	2.2.4.1, 4.1.2.1,4.3.2.1
3.Final Written exam	1.1.1.1, 1.1.3.1, 2.2.4.1

b. Assessment schedule

Assessment 1	Practical	15th week
Assessment 2	Mid-term	8th week
Assessment 3	Oral	16th week
Assessment 4	Written	6th week

c.Weighting of assessments

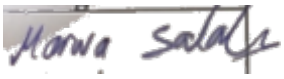
1.	Mid-term examination	10 %
2.	Final-term examination	50 %
3.	Oral examination	15 %
4.	Practical examination and Semester work	25 %
Total		100 %

7. List of References

N0.	Reference	type
1	Theoretical course Notes “Pharmaceutics” prepared by staff members	Course notes
2	"Ansel’s Pharmaceutical Dosage Forms and Drug Delivery Systems" 10th Ed., Wolters Kluwer, Loyd Allen, Howard C. Ansel, Lippincott Williams and Wilkins, Philadelphia, (2013).	Book
3	"Remington’s: The science and practice of pharmacy" 23rd Ed., Pharmaceutical Press, Lippincott Williams and Wilkins, Philadelphia, (2020).	Book
4	"Aulton’s Pharmaceutics: The design and manufacture of medicines" 4th Ed., Michael E.Aulton, Kevin M.G. Taylor, (2013).	Book
5	http://www.sciencedirect.com	Website
6	http://www.google.com	Website
7	http://www.pubmed.com	Website

8. Matrix of knowledge and skills of the course

Course contents	Study Week	Course Key Elements				
		Domain: 1		Domain: 2	Domain: 4	
		1.1.1.1	1.1.3.1	2.2.4.1	4.1.2.1	4.3.2.1
Tablets(def., uses, advantages, disadvantages)	1	√	√	√		
Tablets manufacture	2		√	√		
Tablets coating	3		√	√		
Quality control tests of tablets	4		√	√		
Capsules(def., uses, advantages, disadvantages)	5	√	√	√		
Capsules types	6	√	√	√		
Capsules manufacture	7			√		
Microencapsulation(def., uses, advantages, disadvantages)	8	√	√	√	√	√
Method of microencapsulation preparation	9	√	√	√	√	√
Rectal preparations	10	√	√	√	√	√
Suppositories: def., uses	11	√	√	√	√	√
Types of suppository bases	12			√	√	√
Advantages and disadvantages of suppositories	13	√	√	√		
Evaluation of suppositories	14	√	√	√	√	√

Course Coordinator:	**Dr. Marwa Saladin Mansour El-dahhan** 
Head of Department:	**Prof Dr. Irhan Ibrahim Abu Hashim** 

20/9/2023

Mansoura University
Faculty of Pharmacy
Quality Assurance Unit
Credit Hours Program
Course Specification
2023- 2024

المستوى الثاني	**توصيف مقرر Pharmacognosy 3**

University: Mansoura University (MU)
Faculty : Faculty of Pharmacy
Department : Department of Pharmacognosy
Course title: Pharmacognosy 3
Course code: PG 224

Program on which the course is given	B. Pharm
Academic Level	Second Level, Second semester
Date of course specification approval	9/2023

1- Basic Information : Course data :

Course title:	Pharmacognosy 3	**Code:** PG 224	
Specialization:	**pharmaceutical sciences**		
Prerequisite: Registration			
Teaching Hours:	**Lecture:** 2	**Practical:** 1	
Number of units: (credit hours)	**3**		

2- Course Aims:

2.1 The course provides the student with the skills and knowledge dealing with drugs from different organs such as subterranean organs, unorganized drugs and animal drugs.
2.2 The course prepares the students to the practical aspects and steps for identification of natural medicinal drugs.
2.3 It provides the student with the basic knowledge concerning the different chemical active constituents derived from subterranean organs, unorganized drugs and animal drugs.
2.4 Prepare the students to be able to participate in national and international natural drug fields and able to upgrade their knowledge.

3- 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	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	Illustrate main active constituents of the studied medicinal plants as well as their therapeutic effects and safety.

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. 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 K. element no.	Course K. element no.	Course K. 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.

4- Contents :-

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1.	Introduction to subterranean organs	2	2	
2.	Subterranean organs as Ipecacuanha, filix mas, Senega	2	2	
3.	Cont. Subterranean organs as Liquorice, Ginseng , Hydrastis	2	2	
4.	Cont. Subterranean organs as Ginger, Curcuma, Galangal	2	2	
5	Cont. Subterranean organs as Gentian, Rhubarb, Jalap	2	2	
6	Cont. Subterranean organs as Calumba, Rauwolfia	2	2	
7	Cont. Subterranean organs as aconite, Sarsaparilla	2	2	
8	Cont. Subterranean organs as Bryonia, Dandelion	2	2	
9	Introduction to unorganized drugs	2	2	
10	Unorganized drugs as gum, dried extracts	2	2	
11	Cont. Unorganized drugs as balsams.	2	2	
12	Cont. Unorganized drugs as dried latex	2	2	

13	Cont. Unorganized drugs as dried Juices	2	2	
14	Cont. Unorganized drugs as resin and resin combinations (resins, gum-resin, oleo-gum-resin).	2	2	
16	**Week 16 Final written & oral**			
	Practical topics			
1	Macro- and micro-morphology of Liqourice rhizomes	2		1
2	Examination of powdered Rhubarb	2		1
3	Macro- and micromorphology of Ginger	2		1
4	Examination of powdered Curcuma	2		1
5	Examination of powdered Galangal	2		1
6	Examination of Jalap morphology and Unknown powder	2		1
7	Introduction to Unorganized drugs	2		1
8	**Week 8 Mid-term**			
9	Unorganized drugs (Gum Arabic, Gum tragacanth)	2		1
10	Unorganized drugs (Gelatin, Agar)	2		1
11	Unorganized drugs (Aloe, Colophony)	2		1
12	Unorganized drugs (Myrrh)	2		1
13	Unorganized drugs (Asafetida)	2		1
14	Revision	2		1
15	**Week 15 Practical exam**			

5- Teaching and learning Methods:

5.1	**Computer aided learning:** **a. On line learning through my mans "Mansoura university "as recorded – video lectures** **b. Inter active discussion through My Mans**

5.2	Practical session using laboratory equipment (microscope and glass wares)
5.3	Research assignments
5.4	Case study
5.5	Discussion session

6- Student Assessment:

a- Assessment methods:

1-Written exam	To assess understanding, intellectual, professional
2-Practical exam	To assess professional and practical skills
3-Oral	To assess Knowledge, understanding, intellectual skills, general skills and confidence
4-Quizzes	To assess Knowledge, understanding and intellectual skills
5-Case study	To assess the skills of problem-solving and date presentation

b- Assessment schedule

Assessment 1	Periodical exam	8th week
Assessment 2	Practical exam	15th week
Assessment 3	Oral exam	16th week
Assessment 4	Written exam	16th week

c- Weighting of assessments

1	Mid-term examination	10 %
2	Final-term examination	50 %
3	Oral examination	15 %
4	Practical examination & Semester work	25 %
5	Other types of assessment	0
Total		100%

7 - List of References

N0.	Reference	type
1	Advances in pharmaceutical biotechnology, 1st edition, Sp. Vyas, 2015	Book
2	Brooks G.F. and others. Medical microbiology, 19th edn, Appleton and Lange, 2014	Book

3	Medicinal plant biotechnology, Rajesh Arora, 2011	**Book**
4	Lectures notes prepared by staff members	**Course notes**

8- Matrix of knowledge and skills of the course

Course contents	Study Week	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	2.3.1.1	4.1.1.1	4.2.1.1	4.3.2.1
Introduction to subterranean organs	1	√	√	√	√						
Subterranean organs as Ipecacuanha, filix mas, Senega	2	√	√	√	√	√	√				
Cont. Subterranean organs as Liquorice, Ginseng , Hydrastis	3	√	√	√	√	√	√				
Cont. Subterranean organs as Ginger, Curcuma, Galangal	4	√	√	√	√						
Cont. Subterranean organs as Gentian, Rhubarb, Jalap	5	√	√	√	√		√				

Cont. Subterranean organs as Calumba, Rauwolfia	**6**	√	√	√	√	√	√	√			
Cont. Subterranean organs as aconite, Sarsaparilla	**7**	√	√	√	√	√	√	√			
Cont. Subterranean organs as Bryonia, Dandelion	**8**	√	√	√		√		√		√	√
Introduction to unorganized drugs	**9.**		√	√	√	√		√		√	√
Unorganized drugs as gum, dried extracts	**10**		√	√	√	√		√		√	√
Cont. Unorganized drugs as balsams.	**11**		√	√	√		√	√	√		
Cont. Unorganized drugs as dried latex	**12**	√	√	√	√	√	√	√	√	√	√
Cont. Unorganized drugs as dried Juices	**13**		√	√	√		√	√	√		
Cont. Unorganized drugs as	**14**		√	√	√		√	√	√		

resin and resin combinations (resins, gum-resin, oleo-gum-resin).											

Course Coordinator :	**Ass. Prof. Dr. Amal Galala**
Head of Department	**Prof. Mahmoud Fahmi Elsebai**

Second Level

Course Specification: Pharmaceutical Analytical Chemistry (2)

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmaceutical Analytical Chemistry
Course title: Pharmaceutical Analytical Chemistry (2)
Course code: PA 224

Program on which the course is given	B. Pharm
Academic Level	Second Level, Second semester, 2023-2024
Date of course specification approval	10/09/2023

1. Basic Information: Course data:

Course title:	**Pharmaceutical Analytical Chemistry (2)**	**Code: PA 224**
Specialization:	**Pharmaceutical**	
Prerequisite:	**Registration**	
Teaching Hours:	**Lecture:22**	**Practical: 1**
Number of units: (credit hours)	**3**	

2. Course Aims:

2.1. Give the principle of quantitative chemical methods of analysis, including oxidation reduction titrations and spectroscopic analysis (spectrophotometry, spectrofluorimetry and atomic absorption spectroscopy (AAS)).
2.2. Recognize the general aspects of statistics and its role in evaluation of analytical results.
2.3. Cover the applications of these methods to pharmaceutical compounds.

3. 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.**

4. Contents:

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1	Introduction to redox titrations	2	2	
2	Nernest equation and Factors affecting redox potential.	2	2 hours	
3	Methods for detection of end point	2	2 hours	
4	- Applications of redox reactions	2	2 hours	
5	- Statistics	2	2 hours	
6	UV/Vis Spectrophotometry; Introduction.	2	2 hours	
7	Components of spectrophotometer, Beer-Lambert law,	2	2 hours	
8	- Factors affecting absorption spectrum	2	2 hours	
9	Applications of UV/Vis Spectrophotometry	2	2 hours	

10	Spectrofluorimetry; Introduction, Factors affecting Fluorescence,	2	2 hours	
11	Components of a fluorometer, applications	2	2 hours	
12	-Atomic Spectroscopy ; Introduction, Principle of AAS, Difference between AAS & molecular spectroscopy	2	2 hours	
13	AAS instrument, Interferences in AAS	2	2 hours	
14	Applications of AAS			
15	Revision and quiz			
16	**Starting of Final written & oral exams**			
	Practical topics			
Week No	**Topics**	**No.of hours**	**Lecture credit hours**	**Practical credit hours**
1.	1- Determination of oxalic acid.	2		1 hour
2.	1- Determination of oxalic acid/acetic acid mix.	2		1 hour
3.	1- Determination of H_2O_2.	2		1 hour
4.	1-Determination of potassium persulfate.	2		1 hour
5.	1-Determination of Fe^{2+}/Fe^{3+} mix.	2		1 hour
6.	1- Determination of lead acetate.	2		1 hour
7	1- Determination of iodine/iodide mixture.	2		1 hour
8.	**Periodical Exam**			
9.	1- Determination of ascorbic acid.	2		1 hour
10.	1- Colorimetry ($KMnO_4$)	2		1 hour
11.	1- Colorimetry ($K_2Cr_2O_7$)	2		1 hour
12.	1- Problems on Beer-Lambert law.	2		1 hour

13.	1- Colorimetry (Fe^{3+} in ampoules)	2		1 hour
14.	Fluorimetry (demonstration)	2		1 hour
15.	PRACTICAL EXAM			

5. Teaching and learning Methods:

5.1	Lectures using Data show, PowerPoint presentations
5.2	Computer aided learning: 3-a On line learning through my mans "Mansoura university "as recorded – video lectures" 3-b Inter active discussion through My Mans
5.3	Self-learning
5.4	Research assignments
5.5	Discussion session
5.6	Laboratory with equipment, chemicals and reagents.

6. Student Assessment:

a- Assessment methods

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	2.2.1.1, 2.2.3.1, 2.2.4.1, 2.3.1.1, 2.3.2.1
3. Oral	4.1.2.1, 1.1.1.1, 1.1.3.1
4. Periodical Exam	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	Practical	15th week
Assessment 2	Periodical	8thweek
Assessment 3	Oral	16thweek
Assessment 4	Written	16thweek

c- Weighting of assessments

1.	Periodical examination	10%
2.	Final-term examination	50%

3.	Oral examination	15%
4.	Practical examination and Semester work	25%
Total		100%

7. List of References

No	Reference	Type
1.	Practical course notes prepared by the department staff members	Course notes
2.	Lecture course notes prepared by the department staff members	Course notes
3.	Fundamentals of Analytical Chemistry , Douglas A.; Skoog; Donald M., West, F.James Holler, Stanely, R.Crouch Thomson, Australia 8th ed. (2004).	Book
4.	Quantitative Chemical Analysis, Daniel C. Harris, 6th ed., W.H. Freeman and Company, New York (2003).	Book
5.	Vogel,s Textbook of Quanitative Chemical Analysis, J. Mendham, M.A, MSc, C. Chem, M. RSC, 6th ed., India (2004)	Book
6.	Pharmaceutical Analytical Chemistry, Quantitative Analysis, Amer, M.M. Faculty of Pharmacy, Cairo University.	Book

8. Matrix of knowledge and skills of the course

Course contents	Study Week	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	1	√	√	√	√	√	√	√			√		
Nernest equation and Factors affecting redox potential.	2		√		√					√			
Methods for detection of end point	3		√			√	√	√	√	√	√	√	√

- Applications of redox reactions	4	√	√	√	√	√	√	√					√
Statistics	5			√	√	√	√	√	√				
UV/Vis Spectrophotometry; Introduction.	6	√	√	√	√	√	√	√	√	√	√	√	√
Components of spectrophotometer, Beer-Lambert law,	7	√	√	√	√	√	√	√	√	√	√	√	√
- Factors affecting absorption spectrum	8	√	√	√	√	√	√	√			√		
Applications of UV/Vis Spectrophotometry	9		√		√					√			
Spectrofluorimetry; Introduction, Factors affecting Fluorescence,	10		√			√	√	√	√	√	√	√	√
Components of a fluorometer, applications	11	√	√	√	√	√	√	√					√
-Atomic Spectroscopy; Introduction, Principle of AAS, Difference between AAS & molecular spectroscopy	12			√	√	√	√	√	√				

AAS instrument, Interferences in AAS	13	√	√	√	√	√	√	√	√	√	√	√	√
Applications of AAS	14	√	√	√	√	√	√	√	√	√	√	√	√
Revision and quiz	15									√	√	√	√

Course Coordinator:	**Fawzia Ibrahim**
	فوزيه ابراهيم
Head of Department:	**Jenny Jehan Nasr**
	Jenny Jehan Nasr

Second Level

Course Specification
Heterocyclic Chemistry

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmaceutical Organic Chemistry
Course title: Heterocyclic chemistry
Course code: PO 224

Program on which the course is given	B. Pharm
Academic Level	Second Level, Second semester
Date of course specification approval	20/9/2023

1. Basic Information: Course data:

Course title:	**Heterocyclic chemistry**	**Code: PO 224**
Specialization:	**Pharmaceutical sciences**	
Prerequisite:	**Registration**	
Teaching Hours:	**Lecture: 2**	**Practical: 1**
Number of units: (credit hours)	**3**	

2. Course Aims:

2.1. Gain an understanding of the basic principles of organic chemistry.
2.2. Have a good idea about stereo-chemistry and organic reactions to help in understanding of the next applied sciences.
2.3. 3. Be capable to synthesize and prepare many organic compounds

3. 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 the basic of nomenclature of heterocyclic compounds.
	1.1.1.2	Recognize the physical and chemical properties of different heterocyclic rings.
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.
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 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 K. element no.	Course K. element no.	Course K. element
2.2.1	2.2.1.1	Design, explain the preparation of pharmaceutical organic heterocycles from different sources.
2.5.3	2.5.3.1	Employ different scientific rules of research for synthesis of simple organic compounds and drugs.

DOMAIN 4: PERSONAL PRACTICE

Program K. element no.	Course K. element no.	Course K. element
4.1.1	4.1.1.1	Apply different activities in team work projects and enhance time management abilities.

4. Contents:

Week No	Topics	No. of hours	Lecture credit hours
1.	Heterocyclic Compounds : Nomenclature And Classification	2	2 hours
2	Five-Membered Heterocycles	2	2 hours
3.	Fused Heterocycles of Pyrrole	2	2 hours
4.	Compounds With Two or More Heteroatoms	2	2 hours
5.	Six Membered Heterocycles	2	2 hours
6.	Six-Membered Rings With One Heteroatoms	2	2 hours
7-8	Six-Membered Rings With Two Nitrogen Atoms	4	4 hours
9-10	Six-Membered Rings With Two Different Heteroatoms	4	4 hours
11-12	Pyrrole And Its Derivatives	4	4 hours
13.	Seven-Membered Rings	2	2 hours
14.	Six-Membered Rings With Two Different Heteroatoms	2	2 hours
15.	Revision/Quiz	2	2 hours
16.	Final and Oral Exams		

Practical topics

Week No	Topics	No. of hours	Practical credit hours
1-3	Separation of solid binary mixtures of organic compounds	6	3 hour
4.	Organic synthesis	2	1 hour
5.	Synthesis of ethyl acetate ester	2	1 hour

6.	Synthesis of glucosazone	2	1 hour
7.	Synthesis of nitrotoluene	2	1 hour
8.	Periodical Exam	-	-
9-10.	Synthetic strategies	2	1 hour
11.	Synthesis of nitronaphthalene	2	1 hour
12	Synthesis of iodoform	2	1 hour
13	Synthesis of azodye	2	1 hour
14	Purification Methods	2	1 hour
15	Practical Exam	2	1 hour

5. Teaching and learning Methods:

5.1	Computer aided learning: a. On line learning through my mans "Mansoura university "as recorded – video lectures b. Inter active discussion through My Mans c. power point presentation
5.2	Self-learning
5.3	Computer aided learning: Group discussion
5.4	Problem – based learning and brainstorming
5.5	Practical session using laboratory equipment (Microscopes and glass wares), and tutorials

6. Student Assessment:

a-Assessment methods

1. Quizzes	To assess understanding, intellectual and professional skills
2. Oral exam	To assess knowledge, understanding, intellectual skills, general skills and confidence
3. Practical exam	To assess professional and practical skills
4. Lab. reports	To assess the skills of problem-solving and date presentation
5. Written exam	To assess understanding, intellectual and professional skills

b-Assessment schedule

Assessment 1	Periodical	8th week
Assessment 2	Practical	15th
Assessment 3	Written	16th week

Assessment 4	Oral	16th week

c.Weighting of assessments

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

7. List of References

No	Reference	Type
1.	Practical course notes and lectures notes prepared by the department staff members	Course notes
2.	Organic Chemistry: Structure and Reactivity by Seyhan N. Hardcover - Jul 2003)	Book
3.	Handbook of Heterocyclic Chemistry, Second Edition by Alan R. Katritzky and Pozharskii (Paperback - Oct 16, 2000	Book
4.	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	Essential Book
5.	Jacobi, P.A. Introduction to Heterocyclic Chemistry. 1st Edition, John Wiley & Sons, Hoboken, New Jersey, 2019.	Recommended Book
6.	John A. Joule, Keith Mills. Heterocyclic Chemistry, 5th Edition, Wiley-Blackwell, 2013.ISBN: 978-1-118-68164-0	Recommended Book
7.	FITTON, Alan Ogden; SMALLEY, Robert Kenneth. Practical heterocyclic chemistry. Elsevier, 2013.	Recommended Book

8. Matrix of knowledge and skills of the course

Course contents	Study Week	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	1.	√		√	√	√	√	√			
five-membeed heterocycles	2	√	√	√	√	√	√	√			
fused heterocycles of pyrrole	3										
compounds with two or more heteroatoms	4.	√		√	√	√	√		√	√	
six membered heterocycles	5.	√	√			√	√		√	√	
six-membered rings with one heteroatoms	6.	√	√						√	√	√
six-membered rings with two nitrogen atoms	7-8.	√	√			√	√		√	√	√
six-membered rings with two different heteroatoms	9-10	√	√			√	√		√	√	√
pyrrole and its derivatives	11-12	√	√	√	√	√	√	√	√	√	√
SEVEN-MEMBERED RINGS	13	√	√	√	√	√	√	√	√	√	√
SIX-MEMBERED RINGS WITH TWO DIFFERENT HETEROATOMS	14	√	√	√	√	√	√	√	√	√	√
Revision/Quiz	15				√	√	√	√	√	√	√

Course Coordinator:	**Khalid Beshir Selim** Khalid B. S.
Head of Department:	**Shahenda Metwally EL-Messery**

بكالوريوس الصيدلة

Course Specification

Academic year: 2023/2024

Course name: Biochemistry-1	**اسم المقرر :** الكيمياء الحيوية-1
Academic Level: level two	**المستوى الأكاديمي :** المستوى الثاني
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
Academic Level	Level Two, Second Semester, 2023-2024
Date of course specification approval	16/9/2023

A- Basic Information: Course data:

Course Title	Biochemistry-I
Course Code	**PB 221**
Prerequisite	-
Teaching Hours/ week: Lecture	2
Teaching Credit Hours: Practical/ tutorial	1
Total Credit Hours	3

B- Professional Information:

1- Course Aims:

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

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

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

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)	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.
(4.2.1)	(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 Protein misfolding	2
14	Oxidative stress & human disease	2
15	Revision/quiz	2
16	**Start of Final written and oral exam**	-
Week No.	**Practical topics**	**Practical credit hours**
1	Lab safety and how to use glass wares	1
2	Monosaccharide	1
3	Disaccharide	1
4	Polysaccharide	1
5	Carbohydrate revision	1
6	Protein (Heat co-aggulable protein)	1
7	Neutral protein	1
8	Midterm exam	-
9	Alkaline protein	1
10	Protein revision	1
11	Non-protein nitrogenous compounds (urea)	1
12	Non-protein nitrogenous compounds (uric acid)	1
13/14	Revision/ un-known identification	2
15	**Practical Exam**	-

4- Teaching and learning Methods:

No	Teaching and Learning Methods	Week
4.1	Computer aided learning: a. Online learning through my mans "Mansoura University" as recorded- video lectures b. Interactive discussion through My Mans c. power point presentation	1-15
4.2	Self-learning	13
4.3	Practical sessions using Laboratory equipment, white board and Data show	1-14
4.4	Computer aided learning: Group discussion	13
4.5	Problem solving- based learning and Brain storming	3-9

5- Student Assessment:

a- 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	1.1.5.1, 2.2.1.1, 2.3.1.1, 2.3.2.1,4.1.1.1
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)	1.1.2.1, 1.1.5.1, 1.1.6.1, 4.1.1.1

b- Assessment schedule:

Assessment 1	Periodical (Mid-term exam)	8th week
Assessment 2	Practical exam	15th week
Assessment 3	Written exam	16th week
Assessment 4	Oral exam	16th week

c- Weighing of assessment:

1	Periodical (Mid-term) exam	10%

2	Practical exam	25%
3	Final-term written examination	50%
4	Oral examination	15%
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. course content versus course k. elements:

Study Week	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	4.2.1.1	4.2.2.1	4.3.1.1	4.3.2.1
A) Theoretical Part																
1	Introduction, protein chemistry and functions	✓	✓				✓			✓						
2	Classification of amino acids and Protein structure	✓		✓			✓			✓						
3	Hemoglobin and myoglobin Introduction to vitamins	✓	✓				✓			✓						
4	Water-soluble vitamins		✓			✓	✓			✓						
5	Fat-soluble vitamins				✓	✓	✓			✓		✓		✓		✓
6	Enzymes		✓		✓		✓			✓			✓		✓	
7	Carbohydrate chemistry	✓	✓				✓			✓	✓		✓			✓
8,9	Nucleic acid chemistry:			✓	✓		✓			✓				✓		✓

	-Nitrogenous bases -Nucleoside - Post-transcriptional modifications														
10,11	Lipid chemistry: -Different classes of lipid - Neutral fats	✓			✓		✓			✓	✓		✓	✓	✓	
12	Phospholipids		✓			✓	✓			✓	✓		✓	✓	✓	
13	Cholesterol and ergosterol Protein misfolding		✓			✓	✓			✓	✓		✓	✓		
14	Oxidative stress & human disease	✓	✓			✓	✓			✓	✓			✓		
B) Practical part																
1	Lab safety and how to use glass wares		✓	✓				✓		✓						
2	Monosaccharide		✓	✓			✓	✓		✓						
3	Disaccharide			✓	✓		✓	✓		✓						
4	Polysaccharide			✓				✓		✓						
5	Carbohydrate revision			✓	✓		✓	✓		✓						

6	Protein (Heat co-aggulable protein)		✓	✓	✓		✓					✓	✓	✓		✓
7	Neutral protein			✓			✓	✓	✓	✓		✓	✓	✓	✓	✓
9	Alkaline protein			✓	✓		✓	✓		✓		✓		✓		✓
10	Protein revision			✓			✓	✓	✓	✓		✓		✓		✓
11, 12	Non-protein nitrogenous compounds		✓	✓			✓	✓	✓	✓		✓	✓	✓	✓	✓
13/14	Revision/ un-known identification			✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓

Mansoura University
Faculty of Pharmacy
Quality Assurance Unit
Course Specification
Credit Hours Program
2023- 2024

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

Date: 16/9/2023

Second Level

Course Specification: Pathophysiology

University: Mansoura University (MU)

Faculty: Pharmacy

Department: Pharmacology and Toxicology

Course title: Pathophysiology

Course code: **PH – 223**

Program on which the course is given	B. Pharm
Academic Level	Second level ,second semester, 2020/2021
Date of course specification approval	September 2023

1. Basic Information: Course data:

Course title:	**pathophysiology**	**Code: PH 223**
Specialization:	**medical**	
Prerequisite:	**Registration**	
Teaching Hours:	**Lecture: 2**	**Practical: 0**
Number of units: **(credit hours)**	**2**	

2. Course Aims:

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

2.1. identify basic concepts of pathophysiology at the cellular level related to injury,self defense mechanism,,mutation and cellular proliferation

2.2. identify the pathological factors that influence the disease process and clinical manifestation associated with the diseased organs

2.3 utilize the proper pharmaceutical and medical terminology and to communicate with other healtcare professional

2.4 define the proper pharmaceutical and medical terminology ,abbreviations and symbols in health reports and pharmacy practice

3- 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.
1.1.6	**1.1.6.1**	Utilize scientific literature and collect and interpret information to enhance professional decision
1.1.7	**1.1.7.1**	Recognize new informations that influence patient health care.

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.4.4	**2.4.4.1**	Assess toxicity profiles of chemicals and detect poisons in biological samples.
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.
3.1.2	**3.1.2.1**	Apply the principles of public health to select proper methods of infection control
3.1.4	**3.1.4.1**	Utilize etiology, epidemiology, pathogenesis, laboratory diagnosis, and clinical features to suggest the proper preventive strategies for various infections/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.
4.2.2	**4.2.2.1**	Use artificial technology whenever possible to present relevant information.
4.3.2	**4.3.2.1**	Practice self and independent knowledge.

4. Contents:

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1	Introduction to pathophysiology	2	2	-
2-3	Diseases of cardiovascular system	2	2	-
4	Diseases of respiratory system	2	2	-
5-6	Diseases of gastrointestinal system	2	2	-
7	Diseases of liver	2	2	-
8	Disorders of renal system	2	2	-
9-10	Disorders of endocrine system	2	2	-
11-12	Neurological disorders	2	2	-
13-14	Blood disorders	2	2	-
15	Revision and quiz	2	2	-
16	Final written exams	-	-	-

5. Teaching and learning Methods:

5.1	**Computer aided learning :** **a.online learning through My Mans "Mansoura university "as recorded - video lectures** **b.interactive discussion through My Mans** **c.lectures using power point presentations**
5.2	**Self learning**

5.3	**Research assignments**
5.4	**Case study**

6. Student Assessment:

Assessment methods

Assessment Methods	K elements to be assessed
1-Written exam	**1.1.1.1, 1.1.2.1, 1.1.6.1, 1.1.5.7, 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**
2- Periodical exam	**1.1.1.1, 1.1.2.1, 1.1.6.1, 1.1.5.7, 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**

1. **Assessment schedule**

Assessment 1	**Periodical exam**	**8th week**
Assessment 2	**Written exam**	**16th week**

2. **Weighting of assessments**

1.	**Mid-term examination**	**10 %**
2.	**Final-term examination**	**90%**
total		**100%**

7. List of References

N0.	Reference	type
1	Lectures notes prepared by staff members	Course notes
2	Principles of pathophysiology (shane bullock and majella hales 2013)	Book

8. Matrix of knowledge and skills of the course

Course contents	Study Week	Course Key Elements											
		Domain: 1				Domain: 2		Domain: 3			Domain: 4		
		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	4.1.1.1	4.1.2.1	4.2.1.1
Introduction to pathophysiology	**1**	√	√	√	√	√	√	√	√	√	√	√	
Diseases of cardiovasc	**2-3**	√	√	√	√	√	√						

ular system													
Diseases of respiratory system	**4**	√	√	√	√	√	√						
Diseases of gastrointestinal system	**5-6**	√	√	√	√	√	√				√	√	√
Diseases of liver	**7**	√	√	√	√	√					√	√	√
Disorders of renal system	**8**	√	√			√		√			√	√	√
Disorders of endocrine system	9-10	√	√			√		√			√	√	√
Neurological disorders	**11-12**	√	√			√							
Blood disorders	**13-14**	√	√			√							

Course Coordinator:	**Dr. Manar Gamal**
Head of department:	**Prof. Dr. Manar A. Nader**