Level 3

Semester (5)

Course Title	Course code
Pharmacology-I	PO 501
Pharmaceutical microbiology	PM 502
Pharmaceutical dosage forms-II	PT 505
Biochemistry-II	PB 502
Phytochemistry-II	PG 505
Pathophysiology	MD 507
Pharmacy Administration	PT 506

Semester (6)

Course Title	Course code
Pharmacology-II	PO 602
Pharmaceutical technology	PT 607
Community pharmacy practice	PP 601
Pharmaceuticals analysis and quality control	PC 608
Quality Control of Herbal Drugs	PG 606
Pathology	MD 608
First Aid	MD 609

Course specification
2023/2024
Clinical Pharmacy Program
Faculty of Pharmacy
Mansoura University

Third Level

Course Specification Pharmacology 1

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmacology & Toxicology
Course title: Pharmacology 1
Course code: PO 501

Program on which the course is given	**B. Pharm (Modified and unified bylaw of Clinical Pharmacy Program)**
Academic Level	Level 3, First semester, 2023/2024
Date of course specification approval	18/9/2023

1. Basic Information: Course data:

Course title:	**Pharmacology 1**	**Code:** PO 501
Specialization:	**Medical sciences**	
Prerequisite:	**Physiology**	
Teaching Hours:	**Lecture: 2**	**Practical: 1**
Number of units: (credit hours)	**3**	

2. Course Aims:

2.1. Provide knowledge and understanding of the basic principles of pharmacology (pharmacokinetics and pharmacodynamics).

2.2. Introduce concepts of drug action at cell, tissue and system levels.

2.3. Provide fundamental pharmacological knowledge of the principles of drug action.

2.4. Provide comprehensive coverage of the major drug groups affecting different body systems; autonomic nervous system, respiratory system and autacoids

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
1.1.4	1.1.4.1	List drugs' mechanism of action, therapeutic effects and evaluate their suitability, efficacy, and safety in individuals and populations

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.4.3	2.4.3.1	Formulate pharmaceutical care plans for management of several disorders and drug-related problems with reference to their particulate health problems and special considerations.

Domain 3: Pharmaceutical Care

Program K. element no.	Course K. element no.	Course K. element
3.1.1	3.1.1.1	Adjust a dosage routine for a patient based on the physiological, genetic, and immunological changes brought about by disease or concomitant drug use.
3.2.1	3.2.1.1	Monitor principles of pharmacological aspects of drugs, as mode of action, therapeutic uses, proper dosage, unwanted effects, and drug interactions.

Domain 4: Personal Practice:

Program K. element no.	Course K. element no.	Course K. element
4.1.1	4.1.1.1	Demonstrate decision-making activities with other pharmacy team members and non-pharmacy team members and apply effective time management skills.
4.2.1	4.2.1.1	Present 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	Lecture credit hours
1	Introduction	2

2	Pharmacokinetics (absorption & distribution)	2
3	Pharmacokinetics (metabolism & excretion)	2
4	Pharmacodynamics (Dose-response curve)	2
5	Pharmacodynamics (Drug-Receptor Interactions)	2
6	Pharmacodynamics (types of drugs)	2
7	Pharmacology of Autonomic nervous system (part 1)	2
8	Pharmacology of Autonomic nervous system (part 2)	2
9	Pharmacology of respiratory tract (part 1)	2
10	Pharmacology of respiratory tract (part 2)	2
11	Pharmacology of Autaciods	2
12	Principles of drug interaction (Pharmacodynamics interaction)	2
13	Principles of drug interaction (Pharmacokinetics interaction) (self learning)	2
14	**Revision and quiz**	2
15	**Final written and oral exam**	
	Practical topics	
Week No	**Topics**	**Practical credit hour**
1	Searching Internet	1
2	Handling of Experimental animals	1
3	Routes of drug administration	1
4	Drug metabolism	1
5	Techniques used in experimental research in pharmacology	1
6	Pharmacology of autonomic drugs affecting the eye	1
7	Clinical cases on glaucoma	1
8	**Mid-term Exam**	1
9	Pharmacology of autonomic drugs affecting the GIT	1
10	Effect of Autonomic drugs on Rat Cardiovascular System (Heart rate and Blood pressure)	1
11	Investigation of effect of histamine on Rat Cardiovascular System (Heart rate and Blood pressure)	1
12	Anaphylactic shock	1
13	Peptic ulcer	1

14	Practical exam	1

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	Collaborative learning: research project
5.4	Practical

6. Student Assessment:

a- Assessment methods

1. Mid Term exam	1.1.4.1, 2.4.3.1, 3.1.1.1, 3.2.1.1
2. Practical exam	1.1.4.1, 2.4.3.1, 3.1.1.1, 3.2.1.1, 4.1.1.1, 4.2.1.1
3. Oral	1.1.4.1, 2.4.3.1, 3.1.1.1, 3.2.1.1, 4.1.1.1, 4.2.1.1
4. Final Written exam	1.1.4.1, 2.4.3.1, 3.1.1.1, 3.2.1.1

b- Assessment schedule

Assessment 1	Practical	14th week
Assessment 2	Mid-term	8th week
Assessment 3	Oral	15th week
Assessment 4	Written	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.	Electronic book prepared by staff members	Course notes

2.	Recorded videos prepared by stuff members	**Videos on platform**
3.	Katzung, B. G., Kruidering-Hall, M., & Trevor, A. J. (2021). Katzung & Trevor's pharmacology: Examination & board review (13th edition).	**Book**
4.	Brunton L.,Chabner B. A.,Bjorn Knollman B.A. (2021):Goodman and Gilman's the pharmacological basis of therapeutics (14 th edition).	**Book**
5.	https://www.ncbi.nlm.nih.gov/books/NBK482426/ https://www.ekb.eg	**websites**

8. Matrix of Course content and key element

Week No.	Course contents / K. elements	Domain : 1	Domain 2	Domain: 3		Domain: 4	
		1.14.1	2.4.3.1	3.1.1.1	3.2.1.1	4.1.1.1	4.2.1.1
1	Introduction	√	√	√	√ √		
2	Pharmacokinetics (absorption & distribution)	√	√	√	√		
3	Pharmacokinetics (metabolism & excretion)	√	√	√	√		
4	Pharmacodynamics (Dose-response curve)	√	√	√	√		
5	Pharmacodynamics (Drug-Receptor Interactions)	√	√	√	√	√	√
6	Pharmacodynamics (types of drugs)	√	√	√	√	√	√
7	Pharmacology of Autonomic nervous system (part 1)	√	√	√	√	√	√
8	Pharmacology of Autonomic nervous system (part 2)	√	√	√	√	√	√

9	Pharmacology of respiratory tract (part 1)	√			√		√		√		√	√
10	Pharmacology of respiratory tract (part 2)	√			√		√		√		√	√
11	Pharmacology of Autaciods	√			√		√		√		√	√
12	Principles of drug interaction (Pharmacodynamics interaction)	√			√		√		√		√	√
13	Principles of drug interaction (Pharmacokinetics interaction)	√			√		√		√		√	√
14	**Revision and quiz**	√			√		√		√		√	√

Practical part

Week No.	**Course contents / K. elements**	**Domain : 1**		**Domain 2**		**Domain: 3**			**Domain: 4**	
		1.14.1		2.4.3.1		3.1.1.1		3.2.1.1	4.1.1.1	4.2.1.1
1	Searching Internet	√		√		√		√ √		
2	Handling of Experimental animals	√		√		√		√		
3	Routes of drug administration	√		√		√		√		
4	Drug metabolism	√		√		√		√		
5	Techniques used in experimental research in pharmacology	√		√		√		√	√	√
6	Pharmacology of autonomic drugs affecting the eye	√		√		√		√	√	√

7	Clinical cases on glaucoma	√			√		√		√		√	√
9	Pharmacology of autonomic drugs affecting the GIT	√			√		√		√		√	√
10	Effect of Autonomic drugs on Rat Cardiovascular System (Heart rate and Blood pressure)	√			√		√		√		√	√
11	Investigation of effect of histamine on Rat Cardiovascular System (Heart rate and Blood pressure)	√			√		√		√		√	√
12	Anaphylactic shock	√			√		√		√		√	√
13	Peptic ulcer	√			√		√		√		√	√
14	**Practical exam**											

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

Date: 18/9/2023

Third Level

Course Specification Pharmaceutical Microbiology

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Microbiology and Immunology
Course title: Pharmaceutical Microbiology
Course code: PM 502

Program on which the course is given	B. Pharm (Clinical Pharmacy), Modified and unified bylaw)
Academic Level	Third Level, First semester, 2023-2024
Date of course specification approval	10/9/2023

1. Basic Information: Course data:

Course title:	**Pharmaceutical Microbiology**	**Code:** PM502
Specialization:	**Pharmaceutical sciences**	
Prerequisite:	**----------**	
Teaching Hours:	**Lecture: 2**	**Practical: 1**
Number of units: (credit hours)	**3**	

2. Course Aims:

On completion of the course, the student will be able to Know different sources of microbial contamination and different methods used for preserving pharmaceutical dosage forms, demonstrating different methods of sterilization and understanding the nature of activity of antimicrobials either single or in combination.

3. Course key 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)**	Outline the different chemical and physical methods used to control microbial contamination
(1.1.2)	**(1.1.2.1)**	Define different terms related to sterilization
	(1.1.2.2)	Define different terms related to antimicrobial agents

(1.1.3)	**(1.1.3.1)**	Discuss the principles of source of contamination, control of microbial contamination, sanitation, disinfection, and microbiological QC of pharmaceutical products.
(1.1.4)	**(1.1.4.1)**	Classify the antimicrobials including mechanism of action, therapeutic uses, contraindications, adverse drug reactions and drug interactions.
	(1.1.4.2)	Recognize the different methods used for the evaluation of antimicrobial efficacy and factors affecting it

DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE

Program K. element no.	Course K. element no.	Course K. elements
(2.2.2)	**(2.2.2.1)**	Decide the most suitable sterilization method to be used for each particular pharmaceutical preparation
	(2.2.2.2)	Recommend good laboratory practice (GLP), good manufacture practice (GMP)
(2.2.4)	**(2.2.4.1)**	Implement different quality control and quality assurance measures for the control of microbial contamination
(2.3.2)	**(2.3.2.1)**	Utilize legal and ethical guidelines to ensure the correct and safe supply of medical products to the general public.

DOMAIN 3: PHARMACEUTICAL CARE

Program K. element no.	Course K. element no.	Course K. elements
(3.2.6)	**(3.2.6.1)**	Develop a greater awareness for the consequences of ingesting prescription medicines and risk from environmental and biological threats to public safety.

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 team members and apply effective time management skills.
(4.3.2)	**(4.3.2.1)**	Practice self-learning to improve professional skills

4. Course Contents:

Week No	Topics	Lecture credit hours	Practical credit hours
1	Physical methods of sterilization	2	
2	Chemical methods of sterilization	2	
3	Quality control of sterilization+ Sterility test and aseptic technique+ Pyrogen test	2	
4	Classifications of Antimicrobial agents & Inhibitors of cell wall synthesis	2	
5	Inhibitors of protein synthesis	2	
6	Inhibitors of nucleic acid synthesis	2	
7	Mechanisms of antibiotic resistance in bacteria + Antibiotic combination		
8	Microbial contamination and preservation of pharmaceutical product+ Evaluation of preservative	2	
9	Antifungal agents	2	
10	Antiviral agents	2	
11	Antiviral agents	2	
12	Evaluation of antibiotics (Antibiotic sensitivity testing +Assay)	2	
13	Evaluation of disinfectants and antiseptics +Pyrogen test	2	
14	Revision and quiz	2	
15	Final written and oral exam		
Week No	**Topics**	**Lecture credit hours**	**Practical credit hours**
1	Methods of sterilization		1
2	Efficiency of sterilization methods and sterility test		1
3	Determination of Concentration exponent of disinfectants		1
4	Determination of MIC by microbroth dilution		1
5	Determination of MIC by broth dilution		1
6	Determination of MIC by agar diffusion		1
7	Determination of MIC by agar dilution		
8	**Mid-term Exam**		--
9	Assay of antibiotics by agar diffusion method		1
10	Determination of antimicrobial susceptibility pattern by disc diffusion method		1
11	Antimicrobial combinations		1

12	Evaluation of antiviral drugs activity		1
13	Revision		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. Interactive 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- Periodical (Mid-term exam) / Course work	(1.1.1.1), (1.1.2.1), (1.1.2.2), (1.1.3.1), (1.1.4.1), (1.1.4.2), (2.2.2.1), (2.2.4.1), (2.3.2.1), (3.2.5.1), (3.2.6.1), (3.2.7.1), (4.3.2.1)
2-Practical exam applying OSPE	(1.1.1.1), (1.1.4.2), (2.2.2.1), (2.2.2.2), (2.2.4.1), (3.1.4.1)
3-Written exam	(1.1.1.1), (1.1.2.1), (1.1.2.2), (1.1.3.1), (1.1.4.1), (1.1.4.2), (2.2.2.1), (2.2.4.1), (2.3.2.1), (3.2.5.1), (3.2.6.1), (4.1.1.1), (4.2.1.1) (4.3.2.1)
4-Oral	(1.1.1.1), (1.1.2.1), (1.1.2.2), (1.1.3.1), (1.1.4.1), (1.1.4.2), (2.2.2.1), (2.2.4.1), (3.2.7.1)

b- Assessment schedule

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

c- Weighting of assessments

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

7. Matrix of course content versus course key elements:

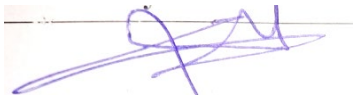
Week	Course contents	Domains / Key elements Outcomes													
		Domain 1						Domain 2				Domain 3		Domain 4	
		1.1.1.1	1.1.2.1	1.1.2.2	1.1.3.1	1.1.4.1	1.1.4.2	2.2.2.1	2.2.2.2	2.2.4.1	2.3.2.1	3.2.6.1		4.1.1.1	4.3.2.1
	A) Theoretical part														
1	Physical methods of sterilization	✓	✓					✓						✓	
2	Chemical methods of sterilization	✓	✓					✓						✓	
3	Quality control of sterilization+ Sterility test and aseptic technique+ Pyrogen test				✓			✓	✓					✓	
4	Classifications of Antimicrobial agents & Inhibitors of cell wall synthesis	✓	✓		✓		✓	✓	✓					✓	✓
5	Inhibitors of protein synthesis						✓		✓	✓				✓	✓
6	Inhibitors of nucleic acid synthesis			✓		✓					✓	✓		✓	
7	Mechanisms of antibiotic resistance in bacteria + Antibiotic combination					✓						✓		✓	✓
8	Microbial contamination and preservation of					✓						✓		✓	✓

	pharmaceutical product+ Evaluation of preservative													
9	Antifungal agents						✓		✓	✓				✓
10	Antiviral agents						✓		✓	✓				✓
11	Antiviral agents						✓		✓	✓				✓
12	Evaluation of antibiotics (Antibiotic sensitivity testing +Assay)	✓	✓		✓		✓	✓	✓				✓	✓
13	Evaluation of disinfectants and antiseptics +Pyrogen test	✓	✓		✓		✓	✓	✓				✓	✓
14	Revision and quiz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	B) Practical part													
1	Methods of sterilization	✓	✓					✓					✓	
2	Efficiency of sterilization methods and sterility test	✓	✓					✓					✓	✓
3	Determination of Concentration exponent of disinfectants	✓	✓					✓					✓	✓
4	Determination of MIC by microbroth dilution	✓	✓					✓					✓	✓
5	Determination of MIC by broth dilution			✓	✓	✓	✓				✓		✓	✓
6	Determination of MIC by agar diffusion			✓	✓	✓	✓				✓		✓	✓
7	Determination of MIC by agar dilution			✓	✓	✓	✓				✓		✓	✓

9	Assay of antibiotics by agar diffusion method			✓	✓	✓	✓				✓			✓	✓
10	Determination of antimicrobial susceptibility pattern by disc diffusion method			✓	✓	✓	✓			✓				✓	✓
11	Antimicrobial combinations			✓	✓	✓	✓			✓				✓	✓
12	Evaluation of antiviral drugs activity		✓	✓		✓	✓			✓		✓		✓	✓
13	Revision	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

8. List of References:

No.	Reference	type
1	Lectures notes prepared by staff members	Course notes
2	Cornelissen, C. N., Fisher, B. D., Harvey, R. A., & Harvey, R. A. (2013). Lippincott's illustrated reviews: Microbiology. 3rd edition, Philadelphia: Lippincott Williams & Wilkins.	Book
3.	Gilmore BF, Denyer SP, editors. Hugo and Russell's pharmaceutical microbiology. John Wiley & Sons; 2023.	Book
4	Willey, J. M., Sherwood, L., Woolverton, C. J., & Prescott, L. M. (2008). Prescott, Harley, and Klein's microbiology. 7th edition, New York: McGraw-Hill Higher Education.	Book
5	https://www.pharmamicroresources.com/p/free-technical-articles.html	Website

Course Coordinator:	**Prof. Dr. EL-Sayed E. Habib** 
Head of Department:	**Prof. Dr. EL-Sayed E. Habib** 

Date: 10/9/2023

Third Level

Pharmaceutical dosage forms 2
Course Specifications

University: Mansoura
Faculty: Pharmacy
Department: Pharmaceutics
Course title: Pharmaceutical dosage forms 2

Program on which the course is given	B. Pharm (Clinical Pharmacy), Modified and unified bylaw)
Academic Level	Level three, first term, 2023-2024
Date of course specification approval	20/9/2023

1- Basic Information: Course data:

Course title:	Pharmaceutical dosage forms 2	**Code:**	PT 505
Specialization:	Pharmaceutical sciences		
Prerequisite: Physical Pharmacy			
Teaching Hours:	**Lecture:** 2	**Practical:**	1
Number of units: (Credit hours)	3		

2- Course Aims:

On completion of the course, the student will be able to recognize of the bases of pharmaceutical calculations, formulation, compounding, preservation, and storage of different dosage forms, enumerate the different properties and classification of semisolid preparations, gain ability to prepare drugs in different dosage forms as rectal and topical preparations and know the different types of pharmaceutical excipients and their uses.

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 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 fort 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- Course Contents:

Week No	Topics	Lecture credit hours	Practical / Tutorial credit hours
1	Semisolid preparations: Definition, classification, methods,	2	
2	Semisolid preparations: evaluation and uses	2	
3	Transdermal and topical drugs: Structure, function & Topical Treatment of skin. Properties that influence percutaneous absorption, methods for studying percutaneous absorption, formulation of dermatological vehicles, liniments, lotions, clinical patches.	2	
4	Transdermal and topical drugs: Cosmetic criteria for dermatological formulations.	2	
5	Suppositories: Definition, Anatomy and physiology of the rectum.	2	
6	Suppositories: absorption of drugs from the rectum	2	

7	Suppositories: Formulation, Manufacture and Quality control.	2	
8	Parenteral preparations: Definition, routes of administration, solvents & vehicles, added substances, preparation, sterilization, packaging, labeling, and storage. **(Mid-term Exam)**	2	
9	Parenteral preparations : quality control.	2	
10	Pharmaceutical aerosols (manufacture) & **Self-learning**	2	
11	Ophthalmic preparations: Definition, sterilization, and bactericides	2	
12	Ophthalmic preparations: physical properties, concentration, tonicity, and Viscosity	2	
13	Ophthalmic preparations: different types of ophthalmic preparation (eye drops, ointment and ocusert)	2	
14	Revision	2	
15-16	Written & Oral Exam		
Week No	**Practical Topics**	**Lecture credit hours**	**Practical credit hours**
1	Ointments		1
2	Sulfur Ointment		1
3	Creams		1
4	Cold Cream		1
5	Vanishing Cream		1
6	Cleansing Cream		1
7	Toothpaste		1
8	**Mid-term Exam**		
9	Plain Fatty suppositories		1
10	Medicated Fatty suppositories		1
11	Plain Water soluble suppositories		1
12	Medicated Water soluble suppositories		1
13	Revision		1
14	**Practical Exam**		

5- Teaching and Learning Methods:

5.1	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
5.2	Self-learning
5.3	Practical session using chemicals and laboratory equipment and/ or tutorials
5.5	Problem – based learning and brainstorming

6- Student Assessment:

a. Assessment methods

1-Written exam	1.1.1.1/ 1.1.3.1/ 2.2.4.1
2-Practical exam	1.1.1.1/2.2.4.1/ 4.1.2.1/ 4.3.2.1
3-Oral	1.1.1.1/ 2.2.4.1/ 4.1.2.1/ 4.3.2.1
4-Midterm exam	1.1.1.1/ 1.1.3.1

b. Assessment schedule

Assessment 1	Mid-term	8th week
Assessment 2	Practical	14th week
Assessment 3	Written	15th-16th week
Assessment 3	Oral	15th-16th 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. Matrix of course content versus course key elements:

Study Week	Course contents	Domains / Key elements Outcomes				
		Domain 1		Domain 2		Domain 4

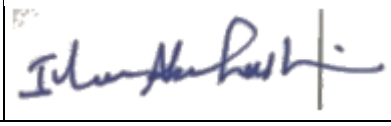
		1.1.1.1	1.1.3.1		2.2.4.1		4.1.2.1	4.3.2.1
	A) Theoretical part							
1	Semisolid preparations: Definition, classification, methods,	□	□		□		□	□
2	Semisolid preparations: evaluation and uses	□	□		□		□	□
3	Transdermal and topical drugs: Structure, function & Topical Treatment of skin. Properties that influence percutaneous absorption, methods for studying percutaneous absorption, formulation of dermatological vehicles, liniments, lotions, clinical patches.	□			□		□	□
4	Transdermal and topical drugs: Cosmetic criteria for dermatological formulations.	□			□		□	□
5	Suppositories: Definition, Anatomy and physiology of the rectum.	□			□		□	□
6	Suppositories: absorption of drugs from the rectum	□			□		□	□
7	Suppositories: Formulation, Manufacture and Quality control.	□			□		□	□
8	Parenteral preparations: Definition, routes of administration, solvents & vehicles, added substances, preparation, sterilization, packaging, labeling, and storage. **(Mid-term Exam)**		□		□		□	□
9	Parenteral preparations : quality control.		□		□		□	□
10	Pharmaceutical aerosols (manufacture) & **Self-learning**	□					□	□
11	Ophthalmic preparations: Definition, sterilization, and bactericides		□		□		□	□

12	Ophthalmic preparations: physical properties, concentration, tonicity, and Viscosity		□		□	□	□
13	Ophthalmic preparations: different types of ophthalmic preparation (eye drops, ointment and ocusert)		□		□	□	□
14	Revision		□		□	□	□
	B) Practical part						
1	Ointments	□			□	□	□
2	Sulfur Ointment	□			□	□	□
3	Creams	□			□	□	□
4	Cold Cream	□			□	□	□
5	Vanishing Cream	□			□	□	□
6	Cleansing Cream	□			□	□	□
7	Toothpaste	□			□	□	□
8	**Mid-term Exam**						
9	Plain Fatty suppositories				□	□	□
10	Medicated Fatty suppositories				□	□	□
11	Plain Water soluble suppositories				□	□	□
12	Medicated Water soluble suppositories	□			□	□	□
13	Revision	□			□	□	□

8. 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.	"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**
4.	"Remington's: The science and practice of pharmacy" 23rd Ed., Pharmaceutical Press, Lippincott Williams and Wilkins, Philadelphia, (2020).	**Book**
5.	"Aulton's Pharmaceutics: The design and manufacture of medicines" 4th Ed., Michael E.Aulton, Kevin M.G. Taylor, (2013).	**Book**
6.	http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg	**websites**

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

Date: 20/9/2023

Mansoura University
Faculty of Pharmacy
Clinical Pharmacy Program

Course specification
2023- 2024

Second Level **Course Specification Biochemistry-II**

University:	Mansoura University (MU)
Faculty:	Pharmacy
Department:	Biochemistry
Course title:	Biochemistry-II
Course code:	PB 502

Program on which the course is given	B. Pharm (Clinical Pharmacy), Modified and unified bylaw)
Academic Level	Level 2, second semester, 2023-2024
Date of course specification approval	16/9/2023

1. **Basic Information: Course data:**

Course title:	Biochemistry II	**Code:** PB 502
Specialization:	Clinical Pharmacy	
Prerequisite:	**Biochemistry 1**	
Teaching Hours:	**Lecture: 2**	**Practical: 1**
Number of units: (credit hours)	**3 hours**	

2. Course Aims:

1. **To provide comprehensive coverage of major metabolic pathways that take place in the human body and the consequences of any defect in their action.**
2. **To learn the interrelationship between carbohydrates, lipid, and protein metabolism.**
3. **To study the chemical structure and metabolism of purines.**
4. **To equip students with skills those are both of value to future employment in some areas of biology.**

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 biochemical and clinical sciences.
(1.1.2)	**(1.1.2.1)**	Recognize appropriate pharmaceutical and medical terminology, abbreviations, and symbols in pharmacy practice.
(1.1.3)	**(1.1.3.1)**	Illustrate the principles of fundamental sciences to handle and identify synthetic/natural pharmaceutical raw materials.
(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

		health systems.
(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 macromolecules and, 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 cell types and cell components and physiological, genetic, biochemical, metabolic, and immunological changes brought about by disease or concomitant drug therapy.
(3.1.4)	**(3.1.4.1)**	Illustrate the characters, epidemiology, pathogenesis, and clinical features of infections/diseases and cancers 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.

Mansoura University
Faculty of Pharmacy
Clinical Pharmacy Program

Course specification
2023- 2024

1. **Course Contents:**

Week No	Topics	Lecture credit hours
1	Introduction to the course and metabolism	2
2	Digestion and absorption of carbohydrates.	2
3	Glycolysis and its regulations	2
4	Krebs, HMP, Uronic acid pathways. Glycogen metabolism.	2
5	Monosaccharides interconversion -Gluconeogenesis. Blood glucose.	2
6	Purine metabolism and class activity	2
7	Digestion and absorption of lipids. Neutral lipid metabolism and B-oxidation.	2
8	Fatty acid synthesis.	2
9	Ketogenesis and ketolysis	
10	Phospholipids and Cholesterol. Protein digestion and absorption.	2
11	General protein metabolism.	2
12	Amino acid metabolism part 1	2
13	Amino acid metabolism part 2	2
14	Interrelationship of carbohydrate, lipid and protein metabolism	2
15	**Practical exam**	
16	**Final written & oral**	
Week No	**Practical Topics**	**Practical credit hours**
1	Lab safety and how to use glassware and instruments	1
2	Chemical analysis for biological fluids (urine analysis).	1
3	Urine analysis report : part 1	1
4	Urine analysis report : part 2	1
5	Infection control principles	1
6	Determination of glucose in urine and serum	1
7	Determination of Liver function (plasma protein assessment).	1

8	**Mid-term Exam**	
9	Determination of Liver function (Albumin assessment).	1
10	Determination of Kidney function, creatinine in serum.	1
11	Determination of uric acid in serum.	1
12	Determination of urea in serum.	1
13	Lipid profile assay Seminars.	1
14	Revision.	1
15	**Practical Exam**	

2. Teaching and learning Methods:

5.1	**Computer aided learning:** **a. Online 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	**Practical sessions using Laboratory equipment, white board, and Data show**
5.4	**Computer aided learning: Group discussion**
5.5	**Problem solving- based learning and Brain storming**
5.6	**Class Activity Discussion**

3. Student Assessment:

a- Assessment methods

Periodical exam	**1.1.1.1, 1.1.2.1, , 2.2.1.1, 2.3.1.1, 4.1.1.1**
Practical exam	**1.1.1.1, 1.1.2.1, 2.2.1.1, 2.3.1.1, 2.3.2.1, 3.1.1.1, 3.1.4.1**
Final Written exam	**1.1.1.1, 1.1.2.1, 1.1.3.1, 1.1.5.1,1.1.6.1**
Oral exam	**1.1.1.1, 1.1.2.1, 1.1.3.1, 4.1.1.1, 4.1.2.1,4.2.1.1, 4.2.2.1, 4.3.1.1, 4.3.2.1**

b- Assessment schedule

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

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 %**

4. Matrix of course content versus course key elements:

Study Week	**Course contents**	**Domains / Key elements Outcomes**																
		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**
	A) Theoretical part																	
1	Introduction to the course and metabolism	✔	✔	✔			✔			✔			✔		✔		✔	
2	Digestion and absorpt	✔		✔			✔			✔			✔	✔	✔	✔	✔	

	ion of carbohydrates.																
3	Glycolysis and its regulations	✔	✔	✔			✔			✔				✔	✔	✔	✔	
4	Krebs, HMP, Uronic acid pathways. Glycogen metabolism.	✔	✔	✔		✔	✔			✔					✔		✔	✔
5	Monosaccharides interconversion - Gluconeogenesis. Blood glucose	✔		✔	✔	✔	✔			✔			✔			✔		✔
6	Purine metabolism and class activity	✔	✔	✔	✔		✔			✔				✔	✔		✔	
7	Digestion and	✔		✔	✔		✔			✔				✔		✔		✔

	absorption of lipids, Neutral lipid metabolism and B-oxidation																
8	Fatty acid synthesis	✔		✔	✔		✔			✔	✔				✔		✔
9	Ketogenesis and ketolysis	✔		✔	✔		✔			✔	✔			✔	✔	✔	✔	
10	Phospholipids and Cholesterol. Protein digestion and absorption.	✔	✔	✔		✔	✔			✔	✔				✔	✔		
11	General protein metabolism.	✔		✔			✔			✔					✔			
12	Amino acid metabolism	✔	✔			✔		✔		✔			✔		✔			

	part 1																	
13	Amino acid metabolism part 2	✔	✔			✔		✔		✔			✔		✔		✔	
14	Interrelationship of carbohydrate, lipid and protein metabolism	✔		✔		✔				✔			✔	✔		✔		
B) Practical part																		
1	Lab safety and how to use glassware and instruments	✔	✔	✔			✔	✔		✔			✔	✔	✔	✔	✔	✔
2	Chemical analysis for biological fluids (urine analysis).	✔		✔	✔		✔	✔		✔			✔	✔		✔	✔	✔
3	Urine analysis	✔		✔			✔	✔		✔			✔	✔		✔	✔	✔

	report : part 1																
4	Urine analysis report : part 2	✔		✔	✔		✔	✔		✔			✔			✔		✔
5	Infection control principles	✔	✔	✔	✔		✔	✔		✔			✔		✔	✔		✔
6	Determination of glucose in urine and serum	✔		✔			✔	✔	✔	✔			✔		✔	✔	✔	✔
7	Determination of Liver function (plasma protein assessment).	✔		✔	✔		✔	✔	✔	✔			✔			✔		✔
9	Determination of Liver function (Albumin assessment).	✔		✔	✔		✔	✔	✔	✔			✔			✔		✔

10	Determination of Kidney function, creatinine in serum.	✔	✔	✔			✔	✔	✔	✔			✔	✔	✔	✔	✔	✔
11	Determination of uric acid in serum.	✔		✔	✔		✔	✔	✔	✔			✔	✔	✔	✔	✔	✔
12	Determination of urea in serum.	✔	✔		✔		✔	✔		✔				✔		✔	✔	
13	Lipid profile assay Seminars.	✔	✔		✔	✔		✔		✔			✔		✔	✔		
14	Revision.	✔	✔	✔		✔		✔	✔	✔			✔	✔	✔		✔	

5. 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.	Geetha Damodaran K.Practical Biochemistry.2nd edition-2016.	**Essential Book**
5.	https://www.futurelearn.com/courses/biochemistry	**websites**

Course Coordinator:	To be nominated
Acting Head of Department:	Dr. Noha Mansour Hassan

Date: 16/9/2023

Level-3
Clinical Pharmacy Students
(Credit Hour System)

Phytochemistry-2

University: Mansoura
Faculty : Pharmacy
Department : Pharmacognosy
Course title: Phytochemistry-II

Program on which the course is given	B. Pharm (Clinical Pharmacy), Modified and unified bylaw)
Academic Level	Level 3 – first semester 2023-2024
Date of course specification approval	6/9/2023

1. Basic Information : Course data :

Course title:	Phytochemistry-2	**Code:**	PG 505
Specialization:	Clinical Pharmacy (Pharmaceutical science)		
Prerequisite: Phytochemistry-1			
Teaching Hours:	**Lecture:** 2	**Practical:**	1
Number of units: (credit hours)	3		

2. Course Aims:

Phytochemistry-2 course aims to:

1. Classify the basic structure of naturally occurring alkaloids, glycosides, natural hallucinogenic and anticancer drugs.
2. Understand the different methods of isolation and characterization of alkaloids and glycosides of medicinal value as well as natural hallucinogenic and anticancer drugs.
3. Gain knowledge about the chemistry of natural hallucinogenic and anticancer drugs and their mechanism of action.

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 different classes of alkaloids, tannins and antioxidants with emphasis on those having pharmaceutical applications.
1.1.3	1.1.3.1	Identify the main sources for alkaloids, tannins and antioxidants having pharmaceutical importance and their physical and chemical characters.
	1.1.3.2	Understand principles of different chromatographic methods used for isolation and / or analysis of the previous plant active constituents.
1.1.4	1.1.4.1	Recognize pharmacological effects, medicinal uses as well as structure activity relationships (SAR) of these natural products derived compounds and their pharmacophoric features.
	1.1.4.2	Be aware with anti-cancer agents, drugs affecting CNS, drugs ameliorating liver diseases and anti-inflammatory agents having valuable use in Egypt and worldwide markets.

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.2.1	2.2.1.1	Manipulate the suitable methods for alkaloids, tannins, antioxidants, anti-cancer agents, drugs affecting CNS, drugs ameliorating liver diseases and anti-inflammatory agents: extraction, isolation, purification, qualitative and /or quantitative determination from their respective sources adapting the suitable laboratory rules
2.2.2	2.2.2.1	Analyze alkaloids and/or any of the for mentioned drugs in their natural sources or in the pharmaceutical preparation for quality management employing the suitable chromatographic methods
2.3.1	2.3.1.1	Discriminate poisonous alkaloids and/or any of the titled drugs and apply the safe procedures for their handling to discard any harm to public

Domain 4: Personal Practice:

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

4.1.2	4.1.2.1	Retrieve and evaluate information, solve problems, and work effectively in a team.
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 natural pharmaceutical preparations regarding the studied topics.
4.3.2	4.3.2.1	Practice independent learning to promote continuous professional development.

4. Course Contents:-

Week No	Topics	No. of hours	Lecture (hr.)	Practical
1	Introduction to alkaloids	2	2	
2	Phenyl alkyl amine & purine alkaloids	2	2	
3	Terpene & Imidazole alkaloids	2	2	
4	Quinine and Isoquinoline alkaloids	2	2	
5	Opium & Tropane & Indole alkaloids	2	2	
6	Introduction and Different classes of glycosides	2	2	
7	Alcohol, Simple phenolic, coumarin glycosides	2	2	
8	**Mid-term Exam**			
9	lignans and neolignans and anthraquinones glycosides.	2	2	
10	Flavones and related flavonoid, saponins	2	2	
11	Steroidal glycosides	2	2	
12	cyanogenic glycosides	2	2	
13	Natural hallucinogenic and anticancer drugs.	2	2	
14	**revision and quiz**	2	2	
15	**Final written & oral exams**			
	Practical topics			
1	Qualitative identification (Macro-chemical tests) of Alkaloids: (Dil. Ephedrine, Eserine, Quinine, Quinidine, Colchicine, Atropine)	2		1
2	Qualitative identification (Macro-chemical tests) of Alkaloids: (Emetine, Papaverine, Strychnine, Pilocarpine	2		1
3	Qualitative identification (Macro-chemical tests) of Alkaloids: (Methyl ergometrine, Brucine, Caffeine, Theophylline	2		1
4	General Scheme of Alkaloids using Macro-chemical tests; Unkowns	2		1

5	Micro-crystallization methods for identification of Alkaloids (Caffeine, Ephedrine, Theobromine, Aminophylline,)	2		1
6	Micro-crystallization methods for identification of Alkaloids: (Atropine, Quinine, Papaverine)	2		1
7	Micro-crystallization methods for identification of Alkaloids: (Berberine, Nicotine, Codeine, Strychnine)	2		1
8	**Mid Term Exam**			
9	Qualitative identification of glycosides: (Anthraquinones, and cyanogen)	2		1
10	Qualitative identification of glycosides: (cardiac glycosides and Flavonoids)	2		1
11	Quantitative estimation of glycosides (Colorimetric estimation of digitalis glycosides by Baljet's reagent)	2		1
12	Quatitative estimation of some natural hallucinogenic and anticancer drugs.	2		1
13	Revision	2		1
14	Practical exam			

5. Teaching and learning Methods:

5.1.	Computer aided learning 5.1.1. Online learning through My Mans "Mansoura University as recorded video lectures. 5.1.2. Interactive Discussions through My Mans. 5.1.3. Lectures using Data show, Power point presentaions.
5.2.	Self-Learning
5.3.	Student seminars and research assignments.
5.4.	Case studies

6. Student Assessment:

a- Assessment methods:

1- Mid Term exam	**To assess understanding, intellectual and professional skills**
2-Practical exam	**To assess professional and practical skills**
3-Final Written exam	**To assess understanding, intellectual and professional skills**
4-Oral exam	**To assess understanding, intellectual, general and transferable skills**

b- Assessment schedule

Assessment 1	Practical	12th week
Assessment 2	Mid-term	7th week
Assessment 3	Oral	13th -15th week
Assessment 4	Written	13th -15th 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 %
Total		100%

7- Matrix of course content versus course key elements:

Study Week	Course contents	Domains / Key elements Outcomes												
		Domain 1						Domain 2				Domain 4		
		1.1.1.1	1.1.3.1	1.1.3.1	1.1.3.2	1.1.3.2		2.2.1.1	2.2.2.1	2.3.1.1		4.1.2.1	4.2.1.1	4.3.2.1
	1. Theoretical Part													
1	Introduction to alkaloids	✓	✓									✓		✓
2	Phenyl alkyl amine & purine alkaloids	✓	✓									✓		✓
3	Terpene & Imidazole alkaloids	✓	✓	✓	✓	✓						✓		✓
4	Quinine and Isoquinoline alkaloids	✓	✓	✓	✓	✓						✓	✓	✓
5	Opium & Tropane & Indole alkaloids	✓	✓	✓	✓	✓						✓	✓	✓
6	Introduction and Different classes of glycosides		✓	✓	✓									
7	Alcohol, Simple phenolic, coumarin glycosides		✓	✓	✓									
8	**Mid-term Exam**	✓	✓	✓	✓	✓						✓	✓	✓
9	lignans and neolignans and anthraquinones glycosides.	✓	✓	✓	✓	✓						✓	✓	✓
10	Flavones and related flavonoid, saponins	✓	✓	✓	✓	✓						✓	✓	✓
11	Steroidal glycosides	✓	✓	✓	✓	✓						✓	✓	✓
12	cyanogenic glycosides	✓	✓	✓	✓	✓						✓	✓	✓

13	Natural hallucinogenic and anticancer drugs.	✓	✓	✓	✓	✓						✓	✓	✓
14	**revision and quiz**	✓	✓	✓	✓	✓						✓	✓	✓
	2. **Practical Part**													
1	Qualitative identification (Macro-chemical tests) of Alkaloids: (Dil. Ephedrine, Eserine, Quinine, Quinidine, Colchicine, Atropine)							✓	✓	✓		✓	✓	✓
2	Qualitative identification (Macro-chemical tests) of Alkaloids: (Emetine, Papaverine, Strychnine, Pilocarpine							✓	✓	✓		✓	✓	✓
3	Qualitative identification (Macro-chemical tests) of Alkaloids: (Methyl ergometrine, Brucine, Caffeine, Theophylline							✓	✓	✓		✓	✓	✓
4	General Scheme of Alkaloids using Macro-chemical tests; Unkowns							✓	✓	✓		✓	✓	✓
5	Micro-crystallization methods for identification of Alkaloids (Caffeine, Ephedrine, Theobromine, Aminophylline,)							✓	✓	✓		✓	✓	✓

6	Micro-crystallization methods for identification of Alkaloids: (Atropine, Quinine, Papaverine)							✓	✓	✓		✓	✓	✓
7	Micro-crystallization methods for identification of Alkaloids: (Berberine, Nicotine, Codeine, Strychnine)							✓	✓	✓		✓	✓	✓
9	Qualitative identification of glycosides: (Anthraquinones, and cyanogen)							✓	✓	✓		✓	✓	✓
10	Qualitative identification of glycosides: (cardiac glycosides and Flavonoids)							✓	✓	✓		✓	✓	✓
11	Quantitative estimation of glycosides (Colorimetric estimation of digitalis glycosides by Baljet's reagent)							✓	✓	✓		✓	✓	✓
12	Quatitative estimation of some natural hallucinogenic and anticancer drugs.							✓	✓	✓		✓	✓	✓
13	Revision							✓	✓	✓		✓	✓	✓

8 - List of References

N0.	Reference	type
1	Lectures note written by Faculty members	Course notes
2	Bioactive natural products (Part B): V21 (Studies in Natural Products Chemistry), Elsevier Science; 3 rd ed. (2015)	Reference textbook
4	“Textbook of Pharmacognosy and Phytochemistry” Shah B., Elsevier, (2019)	book
5	"Medicinal Natural Products, a Biosynthetic Approach" Dewick P. M. John Wiely and Sons Ltd (2019)	book
6	Periodicals	Periodicals
7	http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg	websites

Course Coordinator	**Prof. Dr. Weam Nabil Elsayed Ebrahim**
Head of department	**Prof. Dr. Mahmoud F. Elsebai**

Date: 6/9/2023

Course specification
2023/2024
Clinical Pharmacy Program
Faculty of Pharmacy
Mansoura University

Third Level

Course Specifications Pathophysiology

University: Mansoura University (MU)
Faculty : Pharmacy
Department Pharmacology & Toxicology
Course title: Pathophysioloy
Course code: MD 507

Program on which the course is given	**B. Pharm (Clinical Pharmacy-Modified and unified bylaw)**
Academic Level	Level 3, First semester, 2023/2024
Date of course specification approval	18/9/2023

1. Basic Information: Course data:

Course title:	Pathophysiology	**Code**	**MD 507**
Specialization:	Medical sciences		
Prerequisite: Physiology			
Teaching Hours:	**Lecture:** 2	**Practical:**	-
Number of units: (credit hours)	2		

2. Course Aims:

1- Provide knowledge and understanding of the basic dysfunctions of the body systems.
2- Introduce concepts of abnormal cellular, tissue and system hemostasis.
3- Provide comprehensive coverage on the integration of the different body systems pathogenesis

1. 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**	Define information of biomedical and clinical sciences

1-1-5	**1-1-5-1**	Apply the principles and practice of fundamental sciences to solve problems related to human health and health systems

Domain 3: Pharmaceutical Care

Program K. element no.	Course K. element no.	Course K. element
3-1-1	**3-1-1-1**	Adjust a dosage routine for a patient based on the physiological, genetic, and immunological changes brought about by disease or concomitant drug therapy.
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**	Usage of 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**	Present principles of continuing professional development including assessing own learning needs and developing a plan to meet these needs.

4. Contents:

Week No	Topics	Lecture credit hours
1	Introduction to pathophysiology	2
2	Vascular disorders	2
3	Endocrine disorders (part 1)	2
4	Endocrine disorders (part 2)	2

5	Inflammation and immune response	2
6	Respiratory system disorders(part 1)	2
7	Respiratory system disorders(part 2)	2
8	Urinary system disorders (part 1)	2
9	Urinary system disorders (part 2)	2
10	Pancreatic disorders	2
11	GIT disorders	2
12	Liver disorders	2
13	Hematological disorder.	2
14	Prostatic gland disorders (self learning)	2
15	**Final written and oral 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**

6. Student Assessment:

a. **Assessment methods**:

2- Midterm exam	1-1-1-1, 1-1-5-1, 3-1-1-1, 3-1-4-1
3- Practical exam	----------
2 -Written exam	1-1-1-1, 1-1-5-1, 3-1-1-1, 3-1-4-1
3- Oral exam	1-1-1-1, 1-1-5-1, 4-2-1-1, 4-2-2-1, 4-3-2-1

b. **Assessment schedule**

Assessment 1	**Mid-term**	**8thweek**
Assessment 2	**Practical**	**----------**
Assessment 3	**Final Written exam**	**15thweek**
Assessment 4	**Oral exam**	**15thweek**

a- Weighting of assessments

1	**Mid-term examination**	**20 %**
2	**Final-term examination**	**65 %**

3	Oral examination	15 %
4	Practical examination and Semester work	0 %
Total		100%

7. List of References

No	Reference	Type
1.	Lectures notes prepared by staff members	Course notes
2.	Physiology; Elsevier Saunders, Linda S. Costanzo, 7th edition, 2021	Book
3.	Lazenby RB. Handbook of Pathophysiology. Wolters Kluwer/Lippincott Williams & Wilkins Health, Philadelphia USA, 7th ed. 2022.	Book
4.	http://www.sciencedirect.com / http://www.google scholar.com / http://www.pubmed.com https://www.ekb.eg	websites

8. Matrix of Course contents and course key elements

Week No.	Course contents / K. elements	Domain 1			Domain 3			Domain 4		
		1.1.1.1	1.1.5.1		3.1.1.1	3.1.4.1		4.2.1.1	4.2.2.1	4.3.2.1
1	Introduction to pathophysiology	✓	✓		✓	✓				
2	Vascular disorders	✓	✓		✓					
3	Endocrine disorders (part 1)	✓	✓		✓					
4	Endocrine disorders (part 2)	✓	✓			✓				
5	Inflammation and immune response	✓	✓			✓			✓	
6	Respiratory system disorders(part 1)	✓	✓		✓	✓		✓		
7	Respiratory system disorders(part 2)	✓	✓		✓	✓		✓		
8	Urinary system disorders (part 1)	✓	✓		✓	✓		✓		

9	Urinary system disorders (part 2)	✓	✓			✓	✓		✓		
10	Pancreatic disorders	✓	✓			✓	✓		✓		
11	GIT disorders	✓	✓			✓	✓		✓		
12	Liver disorders	✓	✓			✓	✓		✓		
13	Hematological disorder.	✓	✓			✓	✓		✓	✓	✓
14	Prostatic gland disorders **(self learning)**	✓	✓			✓	✓		✓	✓	✓

Course Coordinator:	**Dr. Rania R. Abdelaziz**
Head of department	**Dr. Manar Ahmed Nader**

Date: 18/9/2023

Third Level

Course Specification Pharmacy administration

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmaceutics
Course title: Pharmacy Administration
Course code: PT 506

Program on which the course is given	B. Pharm (Clinical Pharmacy), Modified and unified bylaw)
Academic Level	Level 3, Fifth semester, 2023-2024
Date of course specification approval	20/9/2023

1. Basic Information: Course data:

Course title:	**Pharmacy Administration**	**Code: PT 506**
Specialization:	**Pharmaceutical**	
Prerequisite:	**Registration**	
Teaching Hours:	**Lecture: 1**	**Practical: 0**
Number of units: (credit hours)	**1**	

2. Course Aims:

2.1. Master the major concepts in management and marketing to the different fields of pharmacy practice.
2.2. Understand the different applications involved in different management system.
2.3. Help pharmacy students to construct a new pharmacy concerning the following points: location, design, communication, advertising, and financing.

3. Course k. elements:

DOMAIN 1- FUNDAMENTAL KNOWLEDGE

Program K. element no.	Course K. element no.	Course K. element
1.1.1	**1.1.1.1**	Define the different basic knowledge of pharmacy management.
1.1.6	**1.1.6.1**	Classify different methods of analysis and apply relevant scientific resources to make evidence-based cost-effective health care decisions.

DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE

Program K. element no.	Course K. element no.	Course K. element
2.4.3	**2.4.3.1**	Specify the factors affecting contribution to decision making processes for recognized drug-related and pharmaceutical care problems for values-based pricing.
2.6.1	**2.6.1.1**	Utilize and apply the principles of business administration and management to ensure rational use of financial and human resources.

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 pharmacy team members and non-pharmacy team members and apply effective time management skills.
4.1.3	**4.1.3.1**	Demonstrate innovation and apply entrepreneurial skills within a simulated entrepreneurial activity.
4.2.1	**4.2.1.1**	Communicate effectively in a proper professional language by verbal and non-verbal means.
4.3.2	**4.3.2.1**	Practice self-learning to improve professional skills and developing a plan to meet these needs so promote critical thinking, decision-making, and time managing capabilities.

1. Course Contents:

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1	Introduction and functional areas in the pharmacy. Planning as a management function	1	1	-
2	Common business problems and organization as a management function	1	1	-
3	Staffing, directing, and controlling as management functions.	1	1	-
4	The signs of readiness to become an entrepreneur	1	1	-
5	Introduction to Pharmacy business functions	1	1	-
6	Managing operations	1	1	-
7.	Steps of starting a new pharmacy-part 1	1	1	-

8	Steps of starting a new pharmacy-part 2 **(Mid-term Exam)**	1	1	-
9	Buying a well-established pharmacy and competitive advantages	1	1	-
10	Managing money (part 1) & **Self-learning**	1	1	-
11	Managing money (part 2)	1	1	-
12	Managing people (part 1)	1	1	-
13	Managing people (part 2)	1	1	-
14	Revision	1	1	-
15	**Final written Exam**	-	-	-

2. Teaching and learning Methods:

5.1	**Computer aided learning:** **a. Online 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**

3. Student Assessment:

a- Assessment methods

1-Written exam	1.1.1.1/ 1.1.6.1/ 2.4.3.1/2.4.3.1/2.6.1.1
2-Practical exam	---
3-Oral	---
4-Formative Assessment	1.1.1.1/ 1.1.6.1/ 2.4.3.1/2.4.3.1/2.6.1.1/4.1.1.1/4.1.3.1/4.2.1.1/4.3.2.1

b- Assessment schedule

Assessment 1	**Mid-term**	8th week
Assessment 2	**Practical**	---
Assessment 3	**Written**	15thweek
Assessment 4	**Oral**	---

c- Weighting of assessments

1.	**Mid-term examination**	**10 %**
2.	**Final-term examination**	**90 %**
3.	**Oral examination**	**-**
4.	**Practical examination and Semester work**	**-**

Total	**100**

4. Matrix of course content versus course key elements:

Study Week	Course contents	Domains / Key elements Outcomes							
		Domain 1		Domain 2		Domain 4			
		1.1.1.1	1.1.6.1	2.4.3.1	2.6.1.1	4.1.1.1	4.1.3.1	4.2.1.1	4.3.2.1
1	Introduction and functional areas in the pharmacy. Planning as a management function	√	√	√	√	√	√		
2	Common business problems and organization as a management function	√					√	√	
3	Staffing, directing, and controlling as management functions.	√	√	√			√		√
4	The signs of readiness to become an entrepreneur	√			√	√	√		
5	Introduction to Pharmacy business functions	√						√	√
6	Managing operations	√						√	√
7.	Steps of starting a new pharmacy-part 1	√			√		√	√	
8	Steps of starting a new pharmacy-part 2 **(Mid-term Exam)**	√		√		√		√	
9	Buying a well-established pharmacy and competitive advantages	√				√		√	√
10	Managing money (part 1) & **Self-learning**	√	√	√	√	√	√	√	√

11	Managing money (part 2)	√	√	√				√	√
12	Managing people (part 1)	√	√	√				√	√
13	Managing people (part 2)	√	√	√				√	√
14	Revision	√		√	√	√	√	√	√

8. List of References:

N0.	Reference	Type
1	Shimin Yang, Pharmacy Administration (2nd edition), Beijing, China Medical Technique Press, (2006)	Book
2	Eugene Mick Kolassa, James Greg Perkins, Bruce R Siecker, Pharmaceutical Marketing Principles, Environment, and Practice (1st edition), CRC Press, (2002)	Book
3	Journal of Pharmaceutical Marketing and Management http://www.marketingpower.com/content31634.php	Website
4	Course Notes prepared by the Pharmaceutics Department Staff.	Course Notes

Course Coordinator	**Dr. Elham Abdelmonem Elsaid Mohamed**
	
Head of Department	**Prof. Dr. Irhan Ibrahim Abu Hashim**
	

Date: 20/9/2023

Course specification
2023-2024
Faculty of Pharmacy
Mansoura University
Clinical Pharmacy Program

Third Level

Course Specifications Pharmacology II

University: Mansoura university (MU)
Faculty : Pharmacy
Department : Pharmacology and Toxicology
Course title: Pharmacology II
Course code: PO 602

Program on which the course is given	**B. Pharm (Modified and unified bylaw of Clinical Pharmacy Program)**
Academic Level	Level 3, Second semester, 2023/2024
Date of course specification approval	September 2023

1. Basic Information: Course data:

Course title:	Pharmacology II	**Code:**	PO602
Specialization:	Medical Sciences		
Prerequisite:	Pharmacology I		
Teaching Hours:	**Lecture:** 2	**Practical:**	1
Number of units: (credit hours)	3		

2. Course Aims:

Pharmacology II course aims to:

1. Provide knowledge and understanding of the basic principles of pharmacology pharmacokinetics and pharmacodynamics of various drug classes affecting various body organs and systems.
2. Provide fundamental pharmacological knowledge of the principles of drug action.
3. Provide comprehensive coverage of the major drug groups affecting different body systems; Cardiovascular system, gastrointestinal tract, skeletal muscles, anesthetics and anti-inflammatory 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. element
1.1.4	1.1.4.1	List drugs' mechanism of action, therapeutic effects and evaluate their suitability, efficacy, and safety in individuals and populations.

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.4.3	2.4.3.1	Demonstrate decision making processes for predictable drug-related problems.

Domain 3: Pharmaceutical Care

Program K. element no.	Course K. element no.	Course K. element
3.1.1	3.1.1.1	Adjust a dosage routine for a patient based on the physiological, genetic, and immunological changes brought about by disease or concomitant drug use.
3.2.1	3.2.1.1	Monitor principles of pharmacological aspects of drugs, as mode of action, therapeutic uses, proper dosage, unwanted effects and drug interactions.

Domain 4: Personal Practice:

Program K. element no.	Course K. element no.	Course K. element
4.3.1	4.3.1.1	Apply effective plans to achieve and improve self-practice of pharmacy.

4. Contents:

Week No	Topics	Lecture credit hour
1.	Antihypertensive Drugs (part 1)	2
2	Antihypertensive Drugs (part 2)	2
3	Drugs for Treatment of Congestive Heart Failure (part 1)	2
4	Drugs for Treatment of Congestive Heart Failure (part 2)	2
5	Antiarrythmic drugs	2

6	Diuretics drugs	2
7	Antiplatelets and thrombolytic agents and Anticoagulants	2
8	Anti-inflammatory Drugs	2
9	Anti-anemic Drugs	2
10	Drugs for Treatment of Dyslipidemia	2
11	Pharmacology of Drugs affecting the gastrointestinal Tract	2
12	Skeletal Muscles Relaxants	2
13	Antianginal Drugs (part 1)	2
14	Antianginal Drugs (part 2) (self learning)	2
15	Revision and quiz	2
16	**Final written and oral Exams**	

Week No	**Practical topics**	**Lecture credit hour**
1.	Antihypertensive drugs (Case study1)	1
2	Antihypertensive drugs (Case study2)	1
3	Drugs for Treatment of Congestive Heart Failure (Case study1)	1
4	Drugs for Treatment of Congestive Heart Failure (Case study2)	1
5	Antiarrythmic drugs case study	1
6	Diuretics drugs case study	1
7	Antiplatelets and thrombolytic agents case study	1
8	**Mid-term exam**	
9	Anticoagulants case study	1
10	Anti-inflammatory drugs case study	1
11	Anti-anemic drugs case study	**1**
12	Drugs for Treatment of dyslipidemia case study	1
13	Pharmacology of Drugs affecting the gastrointestinal Tract (case study)	1
14	Antianginal Drugs (case study)	1
15	**Practical exam**	**1**

5. Teaching and learning Methods:

5.1	Lectures using white boards, data shows and online platforms of which Microsoft teams and Moodle
5.2	Practical classes provided with experimental animals for handling and demonstration of toxicities with data shows and white boards for data presentation

5.3	Student seminars and research assignments.
5.4	Case studies

6. Student Assessment:

a- Assessment methods

1-Mid Term exam	**1.1.4.1, 2.4.3.1, 3.1.1.1, 3.2.1.1**
2-Written exam	**1.1.4.1, 2.4.3.1, 3.1.1.1, 3.2.1.1**
3-Practical exam	**1.1.4.1, 2.4.3.1, 3.1.1.1, 3.2.1.1, 4.3.1.1**
4-Oral	**1.1.4.1, 2.4.3.1, 3.1.1.1, 3.2.1.1, 4.3.1.1**

b- Assessment schedule

Assessment 1	Practical	15th week
Assessment 3	Mid-term	8th week
Assessment 3	Oral	16th week
Assessment 4	Written	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 %
Total		100%

7. List of References

No	Reference	Type
1.	Course note by staff member	**Notes**
2.	Katzung and Trevor's Pharmacology Examination and Board Review; Katzung B, Kruidering-Hall M, Tuan RL, Vander TW, Trevor A. McGraw Hill Lange; 13th edition (2021).	**Book**
3.	Rang H Rang and Dale's pharmacology; Ritter J; Flower R; Henderson G; Loke YK; MacEwan D. Elsevier; 9th edition (2020).	**Book**
4.	Lippincott's Pharmacology; illustrated review; Karen Whalen. Wolters Kluwer; 8th edition (2022).	**Book**

5.	Basic & Clinical Pharmacology; Katzung B.G., & Vanderah T.W. (Eds.). McGraw Hill Lange; 15th edition (2021).	**Book**
6.	ACCP guidelines (https://www.accp.com/) Egyptian Knowledge Bank (https://www.ekb.eg/)	**websites**

8. Matrix of knowledge and skills of the course

Study Week	Course contents	Domains / Key elements Outcomes									
		Domain 1		Domain 2		Domain 3				Domain 4	
		1.1.4.1		2.4.3.1		3.1.1.1	3.2.1.1			4.3.1.1	
	A) Theoretical part										
1	Antihypertensive Drugs (part 1)	√		√		√	√				
2	Antihypertensive Drugs (part 2)	√		√		√	√				
3	Drugs for Treatment of Congestive Heart Failure (part 1)	√		√		√	√				
4	Drugs for Treatment of Congestive Heart Failure (part 2)	√		√		√	√				
5	Antiarrythmic drugs	√		√		√	√			√	
6	Diuretics drugs	√		√		√	√			√	
7	Antiplatelets and thrombolytic agents and Anticoagulants	√		√		√	√			√	
8	Anti-inflammatory Drugs	√		√		√	√			√	
9	Anti-anemic Drugs	√		√		√	√			√	
10	Drugs for Treatment of Dyslipidemia	√		√		√	√			√	
11	Pharmacology of Drugs affecting the gastrointestinal Tract	√		√		√	√			√	
12	Skeletal Muscles Relaxants	√		√		√	√			√	
13	Antianginal Drugs (part 1)	√		√		√	√			√	
14	Antianginal Drugs (part 2) (self learning)	√		√		√	√			√	
15	Revision and quiz	√		√		√	√			√	

	B) Practical part					
1	Antihypertensive drugs (Case study1)	√	√	√	√	√
2	Antihypertensive drugs (Case study2)	√	√	√	√	√
3	Drugs for Treatment of Congestive Heart Failure (Case study1)	√	√	√	√	√
4	Drugs for Treatment of Congestive Heart Failure (Case study2)	√	√	√	√	√
5	Antiarrythmic drugs case study	√	√	√	√	√
6	Diuretics drugs case study	√	√	√	√	√
7	Antiplatelets and thrombolytic agents case study	√	√	√	√	√
9	Anticoagulants case study	√	√	√	√	√
10	Anti-inflammatory drugs case study	√	√	√	√	√
11	Anti-anemic drugs case study	√	√	√	√	√
12	Drugs for Treatment of dyslipidemia case study	√	√	√	√	√
13	Pharmacology of Drugs affecting the gastrointestinal Tract (case study)	√	√	√	√	√
14	Antianginal Drugs (case study)	√	√	√	√	√

Course Coordinator :	**Prof. Dr. Ghada Mohamed Suddek**
Head of department	**Prof. dr. Manar Ahmed Nader**

Date: September 2023

Third Level

Course Specification Pharmaceutical Technology

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmaceutics
Course title: Pharmaceutical technology
Course code: PT 607

Program on which the course is given	B. Pharm (Clinical Pharmacy), Modified and unified bylaw)
Academic Level	Level 3, second semester, 2023-2024
Date of course specification approval	20/9/2023

1. Basic Information: Course data:

Course title:	**Pharmaceutical technology**	**Code: PT 607**
Specialization:	**Pharmaceutical**	
Prerequisite:	**Pharmaceutical dosage forms 1**	
Teaching Hours:	**Lecture: 2**	**Practical: 1**
Number of units: (credit hours)	**3**	

2. Course Aims:

2.1. Orienting the students to know the principles of pharmaceutical engineering
2.2. Recognizing different types of unit operations.
2.3. Knowing applications of different unit operations in manufacturing of selected dosage forms.

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 theories of the different unit operations utilized in the pharmaceutical technology.
1.1.6	1.1.6.1	Recognize the quality control of each pharmaceutical operation and how to minimize the error of manufacturing, storage & handling.
1.1.7	1.1.7.1	Identify the construction and operation of these unit operations including heat transfer, evaporation, drying, centrifugation, crystallization, filtration and mixing, size reduction and their equipment.

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.2.2	2.2.2.1	Classify the different equipment commonly used in each unit operation
2.2.3	2.2.3.1	Determine the critical aspects related to the equipment construction that can affect their performance
	2.2.3.2	Specify the advantages, disadvantages and best use of each equipment

Domain 4: Personal Practice:

Program K. element no.	Course K. element no.	Course K. element
4.1.2	4.1.2.1	Retrieve and evaluate information, solve problems, and work effectively in a team.
4.3.2	4.3.2.1	Practice independent learning to promote continuous professional development.

4. Course Contents:

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours

1	Introduction to the course	2	2	
2	Drying	2	2	
3	Filtration- part 1	2	2	
4	Filtration- part 2	2	2	
5	Evaporation	2	2	
6	Centrifugation	2	2	
7	Crystallization	2	2	
8	Heat transfer (**Mid-term Exam**)	2	2	
9	Mixing- part 1	2	2	
10	Mixing- part 2	4	4	
11	Extraction	2	2	
12	Size reduction	2	2	
13	**Discussion of self learning topic**	2	2	
14	Revision	2	2	
16	**Final written and oral exam**			

Practical topics

Week No	Topics	No. of hours	Lecture credit hours	Practical credit hours
1	Dryers	2		1
2	Filters	2		1
3	Evaporators	2		1
4	Centrifuges-1	2		1
5	Centrifuges-2	2		1
6	Crystallizers	2		1
7	Heaters Mixers	2		1
8	**Mid-term Exam**	-		-
9	Extractors-1	2		1
10	Extractors-2 and **Self-learning topic**	2		1
11	Size reduction equipment-part 1	2		1
12	Size reduction equipment-part 2	2		1
13	Size reduction equipment-part 3	2		1
14	Revision	2		1

15	Practical Exam			

5. Teaching and learning Methods:

5.1	Computer aided learning: a. Online 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, 1.1.6.1, 1.1.7.1, 2.2.3.2
2.	Practical exam	2.2.2.1, 2.2.3.1, 2.2.3.2, 4.1.2.1, 4.3.2.1
3.	Oral exam	1.1.1.1, 1.1.6.1, 2.2.2.1, 2.2.3.1, 2.2.3.2, 4.1.2.1, 4.3.2.1
4.	Final Written exam	1.1.1.1, 1.1.6.1, 1.1.7.1, 2.2.2.1, 2.2.3.1, 2.2.3.2

b- Assessment schedule

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

c- Weighting of assessments

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

7. Matrix of course content versus course key elements:

Study	Course contents	Domains / Key elements Outcomes				
		Domain 1		Domain 2		Domain 4

Week		1.1.1.1	1.1.6.1	1.1.7.1		2.2.2.1	2.2.3.1	2.2.3.2		4.1.2.1	4.3.2.1
	A) Theoretical part										
1	Introduction to the course										
2	Drying										
3	Filtration- part 1										
4	Filtration- part 2										
5	Evaporation										
6	Centrifugation										
7	Crystallization										
8	Heat transfer (**Mid-term Exam**)										
9	Mixing- part 1										
10	Mixing- part 2										
11	Extraction										
12	Size reduction										
13	**Discussion of self learning topic**										
14	Revision										
	B) Practical part										
1	Dryers										
2	Filters										
3	Evaporators										
4	Centrifuges-1										
5	Centrifuges-2										

6	Crystallizers										
7	Heaters Mixers										
9	Extractors-1										
10	Extractors-2										
11	Size reduction equipment-part 1										
12	Size reduction equipment-part 2										
13	Size reduction equipment-part 3										
14	Revision										

8. List of References

N0.	Reference	type
1	Course Notes prepared by the 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	Unit Operations of Chemical Engineering. Warren L. McCabe, Julian C. Smith, Peter Harriott, 7th edition (2005).	Book
4	Chemical Engineering Design, Fourth Edition: Chemical Engineering Volume I (Coulson & Richardson's Chemical Engineering) (2009).	Book
5	Lachman/Lieberman's The Theory and Practice of Industrial Pharmacy, 4th Ed., Roop K Khar, SP Vyas , Farhan J Ahmad , Gaurav K Jain, CBS Publishers & Distributors Pvt Ltd (2016).	Book
6	Handbook of Pharmaceutical Manufacturing Formulations 2nd Ed., Sarfaraz K. Niazi (2009)	Book
7	https://books.google.com.eg/books?id=uqXawoxLrnsC&printsec=frontcover&dq=pharmaceutical+technology&hl=en&sa=X&ved=2ahUKEwiKqLWJ5cDyAhUDJhoKHdU-BEQQ6AEwAHoECAMQAg#v=onepage&q=pharmaceutical%20technology&f=false	Website

Course Coordinator:	**Prof. Dr. Hassan Mohamed Elsabbagh**

	
Head of Department:	Prof. Dr. Irhan Ibrahim Abu Hashim
	

Date: 20/9/2023

Course specification

2023-2024

Clinical Pharmacy Program

Faculty of Pharmacy

Mansoura University

بكالوريوس الصيدلة

لائحة موحدة و معدلة

(Unified & Modified by law)

Course Specification

Academic year: 2023-2024

Course name: Community pharmacy practice	اسم المقرر: ممارسة صيدلية مجتمعية
Academic Level: Level 3	المستوى الأكاديمي: اثالث
Scientific department: **Clinical Pharmacy & Pharmacy Practice Department**	القسم العلمي: قسم الصيدلة الإكلينيكية والممارسة الصيدلية
Head of Department: **Dr. Mohamed Elhusseiny Shams**	رئيس القسم: أ.د/ محمد الحسيني شمس
Course Coordinator: **Dr. Moetaza Mahmoud Soliman**	منسق المقرر أ.م.د / معتزة محمود سليمان

University	Mansoura
Faculty	Pharmacy
Department offering the course	Clinical Pharmacy and Pharmacy Practice Department
Department supervising the course	Clinical Pharmacy and Pharmacy Practice Department
Program on which the course is given	**B. Pharm. (Unified & Modified by law)**
Academic Level	Third level, second semester, 2023-2024

Date of course specification approval	7-9-2023

1- Basic Information: Course data:

Course Title	**Community pharmacy practice**
Course Code	**PP-601**
Prerequisite	**Pharmacology 1**
Teaching Hours: Lecture	**1**
Tutorial	**0**
Total Credit Hours	**1 (Credit H)**

2- Course Aims:

The course affords students with fundamentals of evidence-based use for OTC medicines in the community pharmacy settings. The course also familiarizes the students with concepts of patient counseling and pharmaceutical care. Other aims include, providing the students with essential competencies to promote the public health role of the pharmacist in the community pharmacy settings.

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	Differentiate between simple ailments and major diseases.
1.1.4	1.1.4.1	Outline the different pharmacological and non-pharmacological response options for minor ailment in the community pharmacy.
1.1.5	1.1.5.1	Design an individualized optimum therapeutic plan for management of minor illness using over the counter drugs.

DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE

Program K. element no.	Course K. element no.	Course K. element
2.1.4	2.1.4.1	Identify patient cases that requires referral without dispensing OTC medicines.

DOMAIN 3: Pharmaceutical care

Program K. element no.	Course K. element no.	Course K. element
3.2.3	3.2.3.1	Recommend prescription modification after consulting the health care professionals.
3.2.5	3.2.5.1	Practice professional patient counseling to optimize outcomes of pharmaceutical care plan and audit the patient's therapeutic plan in collaboration with healthcare professional
3.2.6	3.2.6.1	Promote public understanding of important vaccinations and self monitoring of chronic diseases.

DOMAIN 4: PERSONAL PRACTICE

Program K. element no.	Course K. element no.	Course K. element
4.3.2	**4.3.2.1**	Practice self-learning to improve professional skills.

4- Course Contents

Week No.	Topics	Lecture Hours
1	Introduction to Community pharmacy	2
2	Women's Health Cystitis	2
3	Women's Health Premenstrual syndrome, Dysmenorrhoea, Menorrhagia	2
4	Childhood Conditions Chickenpox, Infantile colic, napkin dermatitis, Head lice, Threadworm,	2
5	Skin Conditions Acne, Psoriasis, Scabies, Dandruff, Athlete's foot	2
6	OTC medications for respiratory diseases Common Cold& Flu, Sore Throats and Cough	2
7	Specific product recommendation-1 Smoking cessation-Obesity Management	2
8	Specific product recommendation-2: Motion sickness	2
9	OTC medications for gastrointestinal diseases- 1 Mouth ulcers, Heartburn, Indigestion	2
10	OTC medications for gastrointestinal diseases- 2 Diarrhea, and constipation	2
11	OTC medications for painful conditions Headache	2

12	OTC medications for painful conditions- 2 Musculoskeletal problems	2
13	Eye and Ear Problems (self-learning topic)	2
14	Discussion and revision	2
15	**Starting of Written exam**	--

Week No.	Tutorial topics	Hours
1	Training in making a diagnosis: AS METHOD Pharmaceutical calculation for community pharmacist	1
2-3	Case study: Women's Health	2
4	Case study: Childhood Conditions	1
5	Case study: Skin Conditions	1
6	Case presentation: Common cold & Flu	1
7	Case presentation: Cough	1
8	Midterm	-
9	Specific product recommendation Smoking cessation Obesity management	1
10	Case Presentation: GERD Indigestion Mouth Ulcers	1
11	Case Presentation: Constipation Diarrhea	1
12	Hands on use of mobile applications for community pharmacist Guidance on monitoring of chronic diseases in the community pharmacy	1
13	Group project presentation (selected topics)	1
14	Sheet / and Tutorial exam (OSCE)	....

5- Teaching and Learning Methods:

	Teaching and Learning method	Week no.

5.1	Computer aided learning: Lectures using Data show, power Point presentations Distance learning Online learning through My Mans "Mansoura university "as recorded – video lectures Inter active discussion through My Mans	Week 1-14
5.2	Self-learning	Week 13
5.3	Practical sessions using tutorials	Week 1-13
5.4	Class Activity: Group discussion offline and online	Week 1-14

6- Student Assessment:

a- Assessment Methods:

1-Written exam	1.1.1.1, 1.1.4.1, 1.1.5.1, 1.1.9.1, 2.1.4.1, 3.2.3.1, 3.2.5.1, 3.2.6.1, 4.3.2.1
2-Tutorial exam (OSCE)	1.1.1.1, 1.1.4.1, 1.1.5.1, 1.1.9.1, 2.1.4.1, 3.2.3.1, 3.2.5.1, 3.2.6.1, 4.3.2.1
3-Oral	1.1.1.1, 1.1.4.1, 1.1.5.1, 1.1.9.1, 2.1.4.1, 3.2.3.1, 3.2.5.1, 3.2.6.1

b- Assessment schedule

Assessment 1	Periodical (Mid-term exam)	8th week
Assessment-2	Tutorial examination (OSCE)	14th week
Assessment 3	Written	Starting in 15th week
Assessment 4	Oral	Week 15

c- Weighing of assessments

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

7- Facilities required for teaching and learning

Classroom	Data show- Computers, Internet, Platform
Library	Books and mobile applications

8- Matrix of knowledge and skills of the course

Study Week No.	Course contents	Outcomes Domains / Key elements								
		Domain 1				Domain 2	Domain 3			Domain 4
		1.1.1.1	1.1.4.1	1.1.5.1	1.1.9.1	2.1.4.1	3.2.3.1	3.2.5.1	3.2.6.1	4.3.2.1
1	Introduction to Community pharmacy	√	√	√	√		√	√		
2	Women's Health Cystitis	√	√	√	√	√	√	√	√	
3	Women's Health Premenstrual syndrome, Dysmenorrhoea, Menorrhagia									
4	Childhood Conditions Chickenpox, Infantile colic, napkin dermatitis, Head lice, Threadworm,	√	√	√	√	√	√	√	√	
5	Skin Conditions Acne, Psoriasis, Scabies, Dandruff, Athlete's foot	√	√	√	√	√	√	√	√	
6	OTC medications for respiratory diseases Common Cold& Flu, Sore Throats and Cough	√	√	√	√	√	√	√	√	
7	Specific product recommendation-1 Smoking cessation-Obesity Management	√	√	√	√	√	√	√	√	
8	Specific product recommendation-2: Motion sickness									
9	OTC medications for gastrointestinal diseases- 1 Mouth ulcers, Heartburn, Indigestion	√	√	√	√	√	√	√	√	
10	OTC medications for gastrointestinal diseases- 2 Diarrhea, and constipation	√	√	√	√	√	√	√	√	
11	OTC medications for painful conditions Headache	√	√	√	√	√	√	√	√	
12	OTC medications for painful conditions- 2 Musculoskeletal problems	√	√	√	√	√	√	√	√	

13	Eye and Ear Problems (self-learning topic)	√	√	√	√	√	√	√	√	√
14	Discussion and revision	√	√	√	√	√	√	√	√	
Practical										
1	Training in making a diagnosis: AS METHOD Pharmaceutical calculation for community pharmacist	√	√	√	√	√	√	√	√	√
2-3	Case study: Women's Health	√	√	√	√	√	√	√	√	√
4	Case study: Childhood Conditions	√	√	√	√	√	√	√	√	√
5	Case study: Skin Conditions	√	√	√	√	√	√	√	√	√
6	Case presentation: Common cold & Flu	√	√	√	√	√	√	√	√	√
7	Case presentation: Cough	√	√	√	√	√	√	√	√	√
8	Midterm	√	√	√	√	√	√	√	√	√
9	Specific product recommendation Smoking cessation Obesity management	√	√	√	√	√	√	√	√	√
10	Case Presentation: GERD Indigestion Mouth Ulcers	√	√	√	√	√	√	√	√	√
11	Case Presentation: Constipation Diarrhea	√	√	√	√	√	√	√	√	√
12	Hands on use of mobile applications for community pharmacist Guidance on monitoring of chronic diseases in the community pharmacy	√	√	√	√	√	√	√	√	√
13	Group project presentation (selected topics)	√	√	√	√	√	√	√	√	√

9- 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.	Symptoms in the pharmacy; a Guide to the Management of Common Illness edited by Alison Blenkinsopp, Paul Paxton, and John Blenkinsopp, 8th edition, 2018	Essential Book
4.	https://www.ekb.eg/. https://go.wolterskluwer.com/lexicomp-drug-references-int-b.html?utm_source=google&utm_medium=cpc&utm_campaign=ALL_Lexicomp_INT_Brand&utm_content=001-ETA-Brand_Exact&utm_term=lexicomp&gclid=CjwKCAjwhuCKBhADEiwA1HegOa3V40mlNyAwkxXqqD-MhuJqRWNSUDOi7AlREiUFqTghXadDjRSaGBoC2GcQAvD_BwE https://accesspharmacy.mhmedical.com/ http://www.sciencedirect.com / http://www.google scholar.com/ http://www.pubmed.com	Websites

Course Coordinator	**Dr. Moetaza Mahmoud Soliman**
	Moetaza Soliman
Head of Department	**Dr. Mohamed Elhusseiny Shams**

Date: 7/9/2023

Third level

Course Specification: Pharmaceuticals analysis and quality control

University:	Mansoura University (MU)
Faculty:	Pharmacy
Department:	Pharmaceutical analytical chemistry
Course title:	Pharmaceutical Analysis and Quality Control
Course code:	PC 608

Program on which the course is given	B. Pharm (Clinical Pharmacy), Modified and unified bylaw.
Academic Level	Level 3, second semester, 2023-2024
Date of course specification approval	10/9/2023

1. Basic Information : Course data :

Course title:	Pharmaceutical Analysis and Quality Control	**Code:** PC 608
Specialization:	Pharmaceutical sciences	
Prerequisite:	Pharmaceutical Analytical chemistry-II	
Teaching credit Hours:	**Lecture:** 2	**Practical:** 1
Total Number of units: (credit hours)	3 hours	

2. Course Aims:

This course enables students to:

1- Give the principle and overall definition of quality control, chemical impurities, types and its control, sampling, documentation, recording procedures and Pharmacopoeias monographs.

2- Recognizing different methods of analysis, assay tolerances, stability testing of pharmaceuticals (ICH Guidelines), stability indicating assay methods (SIAM).

3- Knowing validation of stability indicating assay methods and predicted stability.

4- Factors affecting drug degradation, Drug expiration, Drug withdrawal from the market. Pharmaceutical regulations according to FDA & EMA (European medicine agency) and ISO and BSI. Drug-excipient interactions and adduct formation.

3. Course 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 principles of different pharmaceutical sciences
1.1.2	1.1.2.1	Use appropriate terminology and recall the analysis of pharmaceutical compounds using GLP guidelines and validation procedures.
1.1.3	1.1.3.1	List the different analytical techniques for analyze and assure quality of drugs from synthetic and natural origin
1.1.4	1.1.4.1	Distinguish good manufacturing practice and quality control criteria in pharmaceutical industry and critical analysis

DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE

Program K. element no.	Course K. element no.	Course K. element
2.1.2	2.1.2.1	Propose suitable methods of chemical analysis for materials from different origin.
2.2.2	2.2.2.1	Apply Good Manufacturing Practice (GMP) guidelines including principles of quality control related to pharmaceutical industry.
2.2.3	2.2.3.1	Use instruments and different kinds of simulation software to design analytical processes for quality control and quality assurance of raw materials and pharmaceutical products.
2.2.4	2.2.4.1	Implement quality control and quality assurance, calculations, biostatical analysis as per the needs of pharmaceutical industry.
2.3.1	2.3.1.1	Select and apply appropriate methods, resources and procedures for handling and disposal of synthetic/natural materials.
2.3.2	2.3.2.1	Choose best practice and adhere to high ethical, legal and safety standards for management of pharmaceutical materials/products.
2.5.1	2.5.1.1	Determine the different pharmacokinetic parameters from the supplied biological data.

2.6.2	**2.6.2.1**	Practice guidelines of drug promotion, sales, marketing, accounting, and outcomes of pharmacoeconomic analysis.

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 team members and apply effective time management skills.
4.2.2	**4.2.2.1**	Use technology whenever possible to present relevant information.
4.3.1	**4.3.1.1**	Use effective strategies to manage and improve self-practice of pharmacy. Practice guidelines of drug promotion, sales, marketing, accounting, and outcomes of pharmacoeconomic analysis.
4.3.2	**4.3.2.1**	Practice self-learning to improve professional skills

4. Course Contents:

Week No	Topics	Lecture credit hours	Practical / Tutorial credit hours
1	Introduction to Quality control (QC)	2	
2	Chemical Purity of drugs and Official Methods to QC.	2	
3	Specifications of Dosage Forms.	2	
4	Sampling and documentation.	2	
5	Analytical methods of analysis; Gravimetric; Titrimetric	2	
6	Analytical methods of analysis; Electrochemical.	2	
7	Application on electrochemical analysis	2	
8	Molecular Absorption Spectrometry and their applications in drug analysis	2	
9	Atomic Absorption Spectrometry and their applications in drug analysis	2	
10	Validation of analytical methods according to ICH Guidelines.	2	
11	Typical validation characteristics which should be considered, specificity, linearity, range and accuracy, precision, detection	2	

	limit, quantitation limit, robustness, and system suitability testing.		
12	Drug excipient interaction.	2	
13	Introduction on stability indicating assay methods (SIAM)	2	
14	Stability indicating assay methods (SIAM): different pathways of degradation of pharmaceutical drugs.	2	
15	Revision and quiz	2	
16	**Final written and oral exam**	-	
Week No	**Practical Topics**	**Lecture credit hours**	**Practical credit hours**
1	Pharmacopeial monographs		1
2	Validation of Analytical procedures		1
3	Assay of Glacial Acetic acid		1
4	Validation of Analytical procedures		1
5	Assay of Indomethacin in Indocid Capsules		1
6	Assay of Aspirin in Rivo® Tablets		1
7	Problems on validation		1
8	**Periodical Exam**		
9	Assay of zinc content in dosage forms		1
10	Assay of Magnesium content in dosage forms.		1
11	Assay of Calcium content in Calcinate Ampoules		1
12	Assay of Depovit ampoules		1
13	Naftazone and validation quiz		1
14	Haemojet ampoules		1
15	**Practical Exam**		

5. Teaching and Learning Methods:

5.1	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
5.2	Self-learning
5.3	Practical session using chemicals and laboratory equipment and/ or tutorials
5.4	Class Activity: Group discussion offline and online.
5.5	Formative Assignments

6. Student Assessment:

a- Assessment Methods:

Periodical exam	1.1.1.1, 1.1.2.1, 1.1.3.1, 1.1.4.1, 2.2.2.1
Practical exam	2.1.2.1, 2.2.3.1, 2.2.4.1, 2.3.1.1, 2.3.2.1, 2.6.2.1, 4.1.1.1
Final Written exam	1.1.1.1, 1.1.2.1, 1.1.3.1, 1.1.4.1, 2.2.2.1, 2.5.1.1
Oral exam	1.1.1.1, 1.1.2.1, 1.1.3.1, 1.1.4.1,4.3.1.1

b- Assessment schedule

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

c- Weighing of assessments

1	**Periodical examination**	10%
2	**Practical examination**	25%
3	**Final written examination**	50%
4	**Oral examination**	15%
Total		100%

7. Facilities required for teaching and learning

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

8. Matrix of course content versus course key elements:

Study Week	Course contents	Domains / Key elements Outcomes																
		Domain 1					Domain 2								Domain 4			
		1.1.1.1	1.1.2.1	1.1.3.1	1.1.4.1		2.1.2.1	2.2.2.1	2.2.3.1	2.2.4.1	2.3.1.1	2.3.2.1	2.5.1.1	2.6.2.1	4.1.1.1	4.2.2.1	4.3.1.1	4.3.2.1
	A) Theoretical part																	
1	Introduction to Quality control (QC)	□			□													
2	Chemical Purity of drugs and Official Methods to QC.	□			□								□					
3	Specifications of Dosage Forms.	□			□													
4	Sampling and documentation.	□			□													
5	Analytical methods of analysis; Gravimetric; Titrimetric	□		□									□		□		□	
6	Analytical methods of analysis; Electrochemical.	□		□											□		□	

7	Application on electrochemical analysis	▯		▯										▯		▯	
8	Molecular Absorption Spectrometry and their applications in drug analysis	▯		▯										▯		▯	
9	Atomic Absorption Spectrometry and their applications in drug analysis		▯			▯	▯	▯	▯	▯	▯	▯	▯		▯			
10	Validation of analytical methods according to ICH Guidelines.			▯	▯											▯	▯
11	Typical validation characteristics which should be considered, specificity, linearity, range and accuracy, precision, detection limit, quantitation limit, robustness, and system suitability testing.			▯	▯						▯			▯	▯	▯	▯

12	Drug excipient interaction.				▯	▯							▯		▯	▯	▯	▯
13	Introduction on stability indicating assay methods (SIAM)				▯	▯									▯	▯	▯	▯
14	Stability indicating assay methods (SIAM): different pathways of degradation of pharmaceutical drugs.				▯	▯									▯	▯	▯	▯
15	Revision and quiz	▯	▯				▯	▯					▯		▯	▯	▯	▯	▯
	B) Practical part																	
1	Pharmacopeial monographs		▯		▯		▯	▯				▯			▯	▯	▯	▯	▯
2	Validation of Analytical procedures		▯		▯		▯	▯				▯			▯	▯	▯	▯	▯
3	Assay of Glacial Acetic acid		▯		▯		▯	▯				▯	▯		▯	▯	▯	▯	▯
4	Validation of Analytical procedures		▯		▯		▯	▯				▯			▯	▯	▯	▯	▯

5	Assay of Indomethacin in Indocid Capsules																	
6	Assay of Aspirin in Rivo® Tablets																	
7	Problems on validation																	
9	Assay of zinc content in dosage forms																	
10	Assay of Magnesium content in dosage forms.																	
11	Assay of Calcium content in Calcinate Ampoules																	
12	Assay of Depovit ampoules																	
13	Naftazone and validation quiz																	
14	Haemojet ampoules																	

9. List of References

No.	Reference	type
1	Practical course notes prepared by the department staff members	Course notes
2	Theoretical course Notes "Quality Control of Drugs" prepared by staff members	Course notes
3	Skoog, D. A. Holler, F. J. and Crouch, S.R. "Principles of Instrumental Analysis". 7th ed., Thomson, Belmont, USA (2016)	Book
4	Christian, G.D. and O'Reilly, J.E., in "Instrumental Analysis" 6th Ed., Prentice Hall, New Jersy (2013).	Book
5	Daniel C. Harris. "Quantitative Chemical Analysis". 8th ed., W.H. Freeman and Company, New York, (2010)	Book
6	Miller JC & Miller JN Statistics and Chemometrics for Analytical Chemistry, 6th edn. Pearson Education Limited: Harlow, England (2010).	Book
7	Different pharmacopoeias: USP 2016; BP 2016 and EP 2016.	Book
8	ICH Harmonized Tripartite Guideline, Validation of Analytical Procedures: Text and Methodology, Q2(R1), Current Step 4 Version, Parent Guidelines on Methodology Dated November 6, 1996, Incorporated in November 2005. at: http://www.ich.org/LOB/media/MEDIA417.pdf.	Website
9	ICH Harmonized Tripartite Guidelines. Stability testing of new drug substances and products, Q1A (R2) (2003). Accessed 25 October 2010 at: http://www.ich.org/LOB/media/MEDIA419.pdf	Website
10	https://www.ekb.eg http://www.sciencedirect.com http://www.google scholar.com http://www.pubmed.com	Website

Course Coordinator	**Prof. Dr. FathAlla FathAlla Belal**
Head of Department	**Prof. Dr. Jenny Jeehan Mohamed Nasr**

Date: 10/9/2023

Level-3
Clinical Pharmacy Program

Quality control of herbal drugs

University: Mansoura
Faculty : Pharmacy
Department : Pharmacognosy
Course title: Quality Control of Herbal Drugs

Program on which the course is given	B. Pharm (Clinical Pharmacy), Modified and unified bylaw)
Academic Level	**Level 3, Second semester, 2023-2024**
Date of course specification approval	6/9/2023

1. Basic Information : Course data :

Course title:	**Quality Control of Herbal Drugs**	**Code:**	**PG 606**
Specialization:	**Clinical Pharmacy (Pharmaceutical science)**		
Prerequisite: Phytochemistry-2			
Teaching Hours:	**Lecture: 2**	**Practical:**	**1**
Number of units: (credit hours)	**3**		

2. Course Aims:

The aims of this course are to:

1. Deal with the general principles of quality control laboratory scheme and use the different preliminary screening methods for analysis and testing the purity of the crude herbal products.

2. Apply different spectroscopic and chromatographic methods in analysis of herbal products.

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	Distinguish the quality control from herbal aspects, sampling, structural, physical, and analytical standards, purity, safety and adulteration of drugs and their detection.
	1.1.1.2	Retrieve and evaluate information, solve problems, and work effectively in a team.

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.2.1	2.2.1.1	Manipulate the quality control from herbal aspects, sampling, structural, physical, and analytical standards, purity, safety and adulteration of drugs and their detection.
2.5.1	2.5.1.1	Determine the different pharmacokinetic parameters from the supplied biological data.

Domain 4: Personal Practice:

Program K. element no.	Course K. element no.	Course K. element
4.3.2	4.3.2.1	Practice independent learning to promote continuous professional development.

4. Course Contents:

Week No	Topics	Lecture credit hours	Practical / Tutorial credit hours
1	Introduction to the quality control of herbal drugs	2	
2	Pharmacopeial Standards of herbal products	2	
3	Natural plant toxins	2	
4	Poisonous Plants I	2	
5	Poisonous Plants II	2	
6	Herbal adulteration	2	

8	**Mid-term Exam**		
9	Herb-herb interactions	2	
10	Herb- Drug interactions	2	
11	Herb- Food interactions	2	
12	Agrochemical Residue	2	
13	Heavy Metals	2	
14	Biological Contaminants	2	
15	Revision and quiz	2	
16	**Final written and oral exam**		
Week No	**Practical Topics**		**Practical credit hours**
1-2	Introduction to the quality control of herbal drugs		2
3-4	Pharmacopeial Standards of herbal products		2
5-6	Poisonous Plants		2
7	Herb, Drug and Food interactions		1
8	**Mid-term Exam**		
9-10	Agrochemical Residue		2
11-12	Heavy Metals		2
13-14	Biological Contaminants		2
15	**Practical Exam**		

5. Teaching and learning Methods:

5.1.	**Computer aided learning** 5.1.1. Online learning through My Mans "Mansoura University as recorded video lectures. 5.1.2. Interactive Discussions through My Mans. 5.1.3. Lectures using Data show, Power point presentations.
5.2.	**Self-Learning**
5.3.	**Formative Assignments**
5.4.	**Case study and Problem solving**
5.5.	**Research and Reports**

6. Student Assessment:

a- Assessment methods:

1- Mid Term exam	**To assess understanding, intellectual and professional skills**
2-Practical exam	**To assess professional and practical skills**
3-Final Written exam	**To assess understanding, intellectual and professional skills**
4-Oral exam	**To assess understanding, intellectual, general and transferable skills**

b- Assessment schedule

Assessment 1	Practical	15th week
Assessment 3	Mid-term	8th week
Assessment 3	Oral	16th week
Assessment 45	Written	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 %
Total		100%

7. Matrix of course content versus course key elements:

Study Week	Course contents	Domains / Key elements Outcomes					
		Domain 1			Domain 2		Domain 4
		1.1.1.1	1.1.1.2		2.2.1.1	2.5.1.1	4.3.2.1
	1. Theoretical Part						
1	Introduction to the quality control of herbal drugs	✓	✓				
2	Pharmacopeial Standards of herbal products	✓	✓				
3	Natural plant toxins	✓	✓				✓
4	Poisonous Plants I	✓	✓				✓
5	Poisonous Plants II	✓	✓				✓
6	Herbal adulteration	✓	✓				✓
9	Herb-herb interactions	✓	✓				✓
10	Herb- Drug interactions	✓					✓
11	Herb- Food interactions	✓	✓				✓
12	Agrochemical Residue	✓	✓				✓
13	Heavy Metals	✓					✓
14	Biological Contaminants	✓					✓
15	Revision and quiz	✓	✓				✓
	2. Practical Part						
1-2	Introduction to the quality control of herbal drugs				✓		✓
3-4	Pharmacopeial Standards of herbal products				✓	✓	✓
5-6	Poisonous Plants				✓		✓
7	Herb, Drug and Food interactions				✓	✓	✓

9-10	Agrochemical Residue			✓	✓	✓
11-12	Heavy Metals			✓		✓
13-14	Biological Contaminants			✓		✓

8. List of References

N0.	Reference	type
1	Lectures note written by Faculty members	Course notes
2	Tease and Evens, "General Pharmacognosy",saunders, London, New York, Sydney, Toronto, 2015.	book
3	Jackson, B.P. and Snowdon, D.W. "Powdered vegetable drugs" 17th. Ed, W.B. Saunders Company Ltd., London, 2017.	book
4	Egyptian Pharmacopoeia "The English Text", 6rd Ed., Vol. 1, Cairo, General organization for Government Printing Office, 2014.	book
5	WHO guidelines 2017	book
6	http://www. Sciencedirect.com	Website

Course Coordinator :	Prof. Amal Abd-Elhamid Galala
Head of department	Prof. Dr. Mahmoud F. Elsebai
Date	6/9/2023

Course specification
2023/2024
Clinical Pharmacy Program
Faculty of Pharmacy
Mansoura University

Third level

Course specification of Pathology

University: Mansoura University (MU)
Faculty : Medicine
Department : Pathology
Course title: Pathology

Program on which the course is given	B. Pharm (Clinical Pharmacy), Modified and unified bylaw)
Academic Level	Third Level, second semester-2023-2024
Date of course specification approval	10th September , 2023

1- Basic Information : Course data :

Course title:	Pathology	**Code:** MD 608	
Specialization:	Medical		
Prerequisite:			
Teaching Hours:	**Lecture:** 2	**Practical:**1	
Number of units: (credit hours)	3		

2- Course Aims:

On completion of the course, the student will be able to recognize different diseases regard pathologic terminology, pathogenesis, and diagnosis bases on morphologic changes.

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
1.1.2	1.1.1.1	Define inflammation and its pathogenesis and classification with comparison between them.
	1.1.1.2	Define repair & identify its types. Enumerate complication and factors affecting repair.
1.1.4	1.1.4.1	Define & identify different disorders (cardiac and respiratory).

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.1.2	2.1.2.1	Establish the best use of knowledge regarding patient health and associated ethical guidelines.

Domain 3: Pharmaceutical Care

Program K. element no.	Course K. element no.	Course K. element
3.1.4	3.1.4.1	Formulate a systemic approach for the laboratory diagnosis of common infectious clinical conditions and select the most appropriate tools.
3.2.5	3.2.5.1	Develop appropriate methods of infection control to limit infections and promote medical awareness

Domain 4: Personal Practice:

Program K. element no.	Course K. element no.	Course K. element
4.2.1	4.2.1.1	Use the correct medical terms related to different diseases when dealing with different members of the community.
4.3.2	4.3.2.1	Use different approaches to ensure ongoing professional development including self-learning and establishing a strategy to achieve this aim.

3- Course Contents:

Week No.	Topics	Lecture credit Hours
1	Introduction to pathology	2
2	Adaptation, reversible and irreversible cell injury	2
3	Intracellular accumulation of different substances	2
4	Extracellular accumulation of different substances	2
5	Classification and pathogenesis of acute inflammation	2

6	Chronic inflammation	**2**
7	Pathology of repair	**2**
8	Pathology of different circulatory disorders	**2**
9	Introduction to neoplasia	**2**
10	Classification of neoplasia	**2**
11	Thrombosis and embolism	**2**
12	Cardiovascular disorders	**2**
13	Respiratory disorders	**2**
14	CNS disorders	**2**
15	Revision and quiz	**2**
16	Final written exam	**-**

	Practical topics	Lecture credit hours	Practical credit hours
1	Introduction to pathology		1
2	Adaptation		1
3	Intra and extracellular accumulation of different substances		1
4	Acute inflammatory diseases		1
5	Chronic inflammatory diseases		1
6	Complication of repair and scar		1
7	Necrosis		1
8	**Mid Term**		
9	Infraction, hemorrhage and gangrene.		1
10	Thrombosis		1
11	Tuberculosis.		1
12	Benign and malignant tumors		1
13	Bilharziasis		1
14	Revision		1
15	Practical exam		-

4- Teaching and learning Methods:

5.1	Interactive session on platform , PowerPoint presentations
5.2	Practical session
5.3	Case study
5.4	Distance learning
5.5	Self-learning

5- Student Assessment:

a- Assessment methods:

Mid Term exam	1.1.1.1, 1.1.1.2, 1.1.4.1, 2.1.2.1, 3.1.4.1, .3.25.1
Practical exam	1.1.1.1, 1.1.1.2, 1.1.4.1, 2.1.2.1, 3.1.4.1, .3.25.1, 4.2.1.1, 4.3.2.1
Final Written exam	1.1.1.1, 1.1.1.2, 1.1.4.1, 2.1.2.1, 3.1.4.1, .3.25.1,
Oral exam	1.1.1.1, 1.1.1.2, 1.1.4.1, 2.1.2.1, 3.1.4.1, .3.25.1, 4.2.1.1, 4.3.2.1

b- Assessment schedule

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

c- Weighting of assessments

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

6- Facilities required for teaching and learning

Classroom	Data show, Computers, Internet.

7-Matrix : Course content and course key elements:

Course contents	Study Week	Course Key Elements							
		Domain 1			Domain 2	Domain 3		Domain 4	
		1.1.1.1	1.1.1.2	1.1.4.1	2.1.2.1	3.1.4.1	.3.25.1	4.2.1.1	4.3.2.1
Introduction to pathology	1	√	√	√		√			
Adaptation, reversible and irreversible cell injury	2	√	√	√		√			
Intracellular accumulation of different substances	3		√	√		√			
Extracellular accumulation of different substances	4		√	√		√			
Classification and pathogenesis of acute inflammation	5		√	√		√	√	√	√
Chronic inflammation	6	√	√	√	√	√		√	√
Pathology of repair	7		√	√	√	√		√	√
Pathology of different circulatory disorders	8		√	√		√		√	√
Introduction to neoplasia	9		√	√		√		√	√
Classification of neoplasia	10		√	√		√		√	√
Thrombosis and embolism	11	√	√	√	√	√	√	√	√
Cardiovascular disorders	12		√	√		√		√	√
Respiratory disorders	13		√	√		√		√	√
CNS disorders	14		√	√		√		√	√

Revision and quiz	**15**	√	√	√	√	√	√	√	√

Course contents	**Study Week**	**Course Key Elements**							
		Domain 1			**Domain 2**	**Domain 3**		**Domain 4**	
		1.1.1.1	**1.1.1.2**	**1.1.4.1**	**2.1.2.1**	**3.1.4.1**	**.3.25.1**	**4.2.1.1**	**4.3.2.1**
Introduction to pathology	**1**	√	√	√		√			
Adaptation	**2**	√	√	√					
Intra and extracellular accumulation of different substances	**3**		√	√					
Acute inflammatory diseases	**4**		√	√					
Chronic inflammatory diseases	**5**		√	√			√	√	√
Complication of repair and scar	**6**	√	√	√	√			√	√
Necrosis	**7**		√	√	√	√		√	√
Infraction, hemorrhage and gangrene.	**9**		√	√	√	√		√	√
Thrombosis	**10**		√	√	√			√	√
Tuberculosis.	**11**		√	√	√	√		√	√
Benign and malignant tumors	**12**		√	√	√			√	√
Bilharziasis	**13**		√	√	√	√		√	√
Revision	**14**		√	√	√	√	√	√	√

8- List of References

No.	Reference	type
1	Kumar, V., Abbas, A. K., & Aster, J. C. (2015). *Robbins and Cotran pathologic basis of disease* (Ninth edition.). Philadelphia, PA: Elsevier/Saunders.	Book
2	Lectures notes prepared by staff members	Course notes
3	https://www.ekb.eg	website

Course Coordinator :	Prof . Elsayed E. Habib
Head of supervision department	Prof . Elsayed E. Habib

Third Level | **Course Specification First Aid**

University: Mansoura University (MU)
Faculty: Pharmacy
Department: Pharmacology and toxicology
Course title: First Aid
Course code: MD 609

Program on which the course is given	**B. Pharm (Clinical Pharmacy-Modified and unified bylaw)**
Academic Level	Level 3, Second semester, 2023/2024
Date of course specification approval	18/9/2023

1. Basic Information: Course data:

Course title:	**First Aid**	**Code: MD 609**
Specialization:	**Medical sciences**	
Prerequisite:	**Registration**	
Teaching Hours:	**Lecture: 2**	**Practical: 0**
Number of units: (credit hours)	**2**	

2. Course Aims:

2.1. The correct procedures to be followed in the emergency care of a sick or injured casualty.

2.2. The skills and knowledge critical for saving life and minimizing the severity of injury or sudden illness.

2.3. Safety awareness and accident prevention are emphasized throughout the course.

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	Recognize first aid skills and management for a range of common disorders and

		injuries.

Domain 2: Professional and Ethical Practice

Program K. element no.	Course K. element no.	Course K. element
2.1.1	2.1.1.1	Illustrate professional requirements for individuals and healthcare team to provide first aid care.
2.4.1	2.4.1.1	Identify and deal with different causes of poisoning and select the first aid measures for various toxic agents.

Domain 3: Pharmaceutical Care

Program K. element no.	Course K. element no.	Course K. element
3.2.2	3.2.2.1	Assess and perform first aid measures and initial therapy for injured and ill casualties.
	3.2.2.2	Demonstrate how to perform basic first aid technical procedures.

Domain 4: Personal Practice:

Program K. element no.	Course K. element no.	Course K. element
4.3.1	4.3.1.1	Acquire skills to arrange priorities in case of managing medical emergencies in pharmacy.
	4.3.1.2	Practice independent learning to promote first aid knowledge and skills.

4. Course Contents:

Week No	Topics	Lecture credit hours
1	Introduction to first aid	2

2	First aid care for allergic reactions, anaphylaxis, and shock	2
3	Respiratory Emergencies	2
4	Cardiovascular Emergencies	2
5	Diabetic Emergencies	2
6	First aid care for wounds, and burns	2
7	First aid care for choking	2
8	First aid care for bleeding	2
9	First aid care for musculoskeletal injuries	2
10	Neurological emergencies	2
11	Environmental emergencies	2
12	First aid care for Bites and Stings	2
13	Muscles, Bones and joints injuries	2
14	First aid care for poisoning	2
15	Human bites (self-learning)	2
16	**Final theoretical and oral 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** **d. Lectures showing animations and videos to illustrate first aid techniques.**
5.2	**Self-learning**
5.3	**Formative Assignments**

6. Student Assessment:

a- Assessment Methods:

1-Written exam	**1.1.1.1, 2.1.1.1, 2.4.1.1, 3.2.2.1**
2-Practical exam	**……**
3-Oral	**1.1.1.1, 2.1.1.1, 2.4.1.1, 3.2.2.2, 4.3.1.2**
4- Periodical (Mid-term exam)	**1.1.1.1, 2.1.1.1, 2.4.1.1, 3.2.2.1, 4.3.1.1**

b- Assessment schedule:

Assessment 1	**Mid-term**	8th week
Assessment 2	**Practical**	……

Assessment 3	Written	16th week
Assessment 4	Oral	16th week

c- **Weighting of assessments**:

1.	Mid-term examination	20 %
2.	Final-term examination	65 %
3.	Oral examination	15 %
4.	Practical examination and Semester work	0 %
Total		100 %

7. List of References

N0.	Reference	type
1	First Aid Manual, 11th Edition. Written and Authorised by the UK's Leading First Aid Providers (2021).	**Book**
2	First Aid/ CPR/ AED Participant's Manual, Published by American Red Cross (2021).	**Book**
3	Lectures notes prepared by staff members	**Course notes**

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

Week No.	Course contents / K. elements	Domain 1	Domain 2		Domain 3		Domain 4	
		1.1.1.1	2.1.1.1	2.4.1.1	3.2.2.1	3.2.2.2	4.3.1.1	4.3.1.2
1	Introduction to first aid	✓	✓	✓	✓	✓		
2	First aid care for allergic reactions and anaphylaxis	✓	✓	✓	✓	✓		
3	Respiratory Emergencies	✓	✓	✓	✓	✓		
4	Cardiovascular Emergencies	✓	✓	✓	✓	✓		
5	Diabetic Emergencies	✓	✓	✓	✓	✓	✓	✓
6	First aid care for wounds, and burns	✓	✓	✓	✓	✓	✓	✓

7	First aid care for choking	✓			✓	✓			✓	✓		✓	✓
8	First aid care for bleeding	✓			✓	✓			✓	✓		✓	✓
9	First aid care for musculoskeletal injuries	✓			✓	✓			✓	✓		✓	✓
10	Neurological emergencies	✓			✓	✓			✓	✓		✓	✓
11	Environmental emergencies	✓			✓	✓			✓	✓		✓	✓
12	First aid care for Bites and Stings	✓			✓	✓			✓	✓		✓	✓
13	Muscles, Bones and joints injuries	✓			✓	✓			✓	✓		✓	✓
14	First aid care for poisoning	✓			✓	✓			✓	✓		✓	✓
15	Human bites (self-learning)	✓			✓	✓			✓	✓		✓	✓

Course Coordinator	**Dr. Manar Gamal Abdel Hameed Helal**
Head of Department	**Prof. Dr. Manar Ahmed Nader**

Date: 18/9/2023