



Kafr el-Sheikh university
Faculty of Pharmacy
Clinical (Pharm-D) program
Course Specification
2025/2026

Clinical (Pharm-D) program

Course Specification

2025/2026

Second Level

Second Semester

جامعة كفرالشيخ - كلية الصيدلة

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Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Pharmacology 1			
Course Code (according to the bylaw)	PO402			
Department/s participating in delivery of the course	Pharmacology and Toxicology department			
Number of credit hours/points of the course (according to the bylaw)	Theoretical 2	Practical 1	Other (specify)	Total 3
Course Type	Compulsory			
Academic level at which the course is taught	second level, semester2			
Academic Program	Bachelor of Pharmacy (PharmD) (Clinical (Pharmacy))			
Faculty/Institute	Faculty of Pharmacy,			
University/Academy	Kafrelsheikh University.			
Name of Course Coordinator	Prof. Dr. Sherin zakaria			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council)	Department council			

2. Course Overview (Brief summary of scientific content)

This course covers drug acting on autonomic nervous system (ANS); Introduction to ANS, Cholinergic agonists (parasympathomimetic), Cholinergic antagonists (parasympatholytic), Adrenergic agonists (sympathomimetics), Adrenergic antagonists (sympatholytic), Neuromuscular blockers. Drugs acting on cardiovascular system (CVS); Introduction to CVS, Antihypertensive drugs, Anti-angina drugs, Drugs used for congestive heart failure, Antiarrhythmic drugs.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		Upon finishing this course, students will be able to integrate knowledge from basic information about pharmacology, Different categories of autonomic nervous system and cardiovascular system . This competency will be developed via the following key elements:	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	List the different categories of parasympathetic- and sympathetic-acting drugs
		1.1.2	Discuss the physiological responses produced by parasympathetic- and sympathetic-acting drugs and their therapeutic uses.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
1.1.4	Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate their appropriateness, effectiveness, and safety in individuals and populations.	1.1.3	Retrieve information about hypertension and drug therapy and the mechanism of action of drugs and Recognize differences between different types of diuretics.
		1.1.4	Outline the different types of cardiac diseases, such as arrhythmia and congestive heart failure, along with the corresponding drug therapies.
1.1.5	Retrieve information from fundamental sciences to solve therapeutic problems.	1.1.5	State the main drug classes used in treating hypertension, integrating scientific knowledge to ensure effective patient care.
		1.1.6	Outline cardiac diseases and retrieve scientific information to select appropriate drug therapies.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-1- COMPETENCY		Upon finishing this course, students will be able to Work collaboratively as a member of an inter-professional health care team to improve the quality of life of individuals and communities, and respect patients' rights. This competency will be developed via the following key elements:	
2.1.2	Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.	2.1.1	Handle safely synthetic materials and experimental animals to avoid their harm to individuals.
		2.1.2	Apply pharmacological knowledge to set appropriate therapeutic intervention and avoid side effect harming the patients.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
2-2- COMPETENCY		<p>Upon finishing this course, students will be able to Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.</p> <p>This competency will be developed via the following key elements:</p>	
2.2.4	Adopt the principles of pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and bio-pharmaceutics and their applications in new drug delivery systems, dose modification, bioequivalence studies, and pharmacy practice.	2.2.1	Demonstrate practical skills in screening drugs affecting the autonomic nervous system using laboratory animal experiments, and use scientific data to support safe and effective pharmacy practice.
2-3- COMPETENCY		<p>Upon finishing this course, students will be able to Handle and dispose biologicals and synthetic/natural pharmaceutical materials/products effectively and safely with respect to relevant laws and legislations.</p> <p>This competency will be developed via the following key elements:</p>	
2.3.1	Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical fields.	2.3.1	Handle safely synthetic materials and experimental animals to avoid their harm to individuals.
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and	2.3.2	Use effectively laboratory reagents appropriately and safely.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	pharmaceutical materials/products.	2.3.3	Provide the in vitro experiments on isolated organs from laboratory animals.
		2.3.4	Apply the dose-response relationship of the different drug preparations.
	2-4- COMPETENCY		<p>Upon finishing this course, students will be able to actively share professional decisions and proper actions to save patient's life in emergency situations including poisoning with various xenobiotics, and effectively work in forensic fields.</p> <p>This competency will be developed via the following key elements:</p>
2.4.4	Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens.	2.4.1	Identify toxic effect and mechanisms of drug-induced toxicity for agents affecting different body systems.
		2.4.2	Apply experimental pharmacology techniques to measure dose-response relationships and detect toxic effects of autonomic drugs in living organisms.
	Domain 3: Pharmaceutical Care 3-2- Competency		<p>Upon finishing this course, students will be able to provide counselling and education services to patients and communities about safe and rational use of medicines and medical devices.</p> <p>This competency will be developed via the following key elements:</p>
3.2.1	Integrate the pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, adverse drug reactions and drug interactions.	3.2.1	Monitor the pharmacological effects of different autonomic drugs in in vivo experiments
		3.2.2	Integrate knowledge to select suitable cardiovascular drugs according to patients' criteria
3.2.2	Apply the principles of clinical pharmacology and pharmacovigilance for the rational use of medicines and medical devices.	3.2.3	Provide suitable pharmaceutical care plan to patient's base on their pharmacological knowledge.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 4: Personal Practice 4-2- Competency		Upon finishing this course, students will be able to Effectively communicate verbally, non-verbally and in writing with individuals and communities. This competency will be developed via the following key elements:	
4.2.2	Use contemporary technologies and media to demonstrate effective presentation skills.	4.2.1	Apply skills of the ability to interact effectively with patients, the public and health care professionals; including communication, both written and oral.
		4.2.2	Demonstrate effective communication by verbal means and appreciate the joint effort in teamwork
		4.2.3	Analyze data critically and information from different sources.
		4.2.4	Demonstrate critical-thinking abilities.

4. Teaching and Learning Methods

- 1- Lectures
- 2- E-learning
- 3- Practical training/ laboratory
- 4- Case study
- 5- Brain storming
- 6- Assignment
- 7- Discussion
- 8- Seminars



Course Schedule						
Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/)	Training (Practical/Clinical/)	Self-learning (Tasks/Assignments/Projects/ ...)	Other (to be determined)
1	Pharmacological actions of drugs acting on autonomic nervous system	4	2	2		
2	Pharmacological actions of drugs acting on autonomic nervous system (cont.)	4	2	2		
3	Pharmacological actions of drugs acting on autonomic nervous system(cont.)	4	2	2		
4	Pharmacological actions of drugs acting on autonomic nervous system (cont.)	4	2	2		
5	Pharmacological actions of drugs acting on autonomic nervous system (cont.)	4	2	2		
6	Pharmacological actions of drugs acting on autonomic nervous system (cont.)	4	2	2		
7	Semester work					
8	Pharmacological actions of drugs acting on cardiovascular system	4	2	2		
9	Pharmacological actions of drugs acting on cardiovascular system (cont.)	4	2	2		
10	Pharmacological actions of drugs acting on cardiovascular system(cont.)	4	2	2		
11	Pharmacological actions of drugs acting on cardiovascular	4	2	2		

	system (cont.)					
12	Pharmacological actions of drugs acting on cardiovascular system (cont.)	4	2	2		
13	Pharmacological actions of drugs acting on cardiovascular system (cont.)	4	2	2		
14	Pharmacological actions of drugs acting on cardiovascular system (cont.)	2	2	Practical exam		
15	Revision	2	2	Practical exam		

5. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks (%)
1	Exam 1 written (formative exam)	4 th week	5	5
2	Periodical exam	7 th week	10	10
3	Final Practical/Clinical/... Exam	14 th ,15 th	25	25
4	Final Written Exam	16 th ,17 th	50	50
5	Final Oral Exam	16 th ,17 th	10	10

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course (must be written in full according to the scientific documentation method)	The Pharmacological Basis of Therapeutics (2008).Goodman & Gilman's. 12 th editions. The McGraw-Hill Companies
	Other References	<ul style="list-style-type: none"> -Basic & Clinical Pharmacology (2021'). BG. Katzung.15th ed. McGraw-Hill . -Pharmacology (2007). Rang H.P.& Dale M. 7th Edition. Churchill Livingston London -Lippincott Modern Pharmacology (2019). C. Champe, A. Harvey and Denise R. (illustrated pharmacology

		Review). South Asian Edition. Lippincott Williams & Wilkins
	Electronic Sources (Links must be added)	www.biomedcentral.com -www.Pubmed.com -www.medscape.com
	Learning Platforms (Links must be added)	<u>https://lms3.kfs.edu.eg/pharm/login/index.php</u>
	Other (to be mentioned)	
Supportive facilities & equipment for teaching and learning *	Devices/Instruments	-Data show -Computers -Internet .
	Supplies	Laboratory facilities: laboratory animals, chemicals, drugs, animal cages, digital balances and funnels. - Lab notebooks.
	Electronic Programs	----
	Skill Labs/ Simulators	----
	Virtual Labs	----
	Other (to be mentioned)	Data show, smart board, Unit for distance learning, Computers, Internet and Library.

Course Plan

Matrix of course learning outcomes CLOs – Teaching and Learning Strategy and Student Assessment

Course title: **Pharmacology 1**

Course code: **PO402**

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Pharmacological actions of drugs acting on autonomic nervous system	1.1.1, 1.1.2, 2.1.1, 2.1.2, 2.2.1, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.4.2, 3.2.1, 3.23, 4.2.1,	Lectures, E-learning, practical training and class activities	Written, practical and oral exams

		4.2.2, 4.2.3, 4.2.4		
Week # 2	Pharmacological actions of drugs acting on autonomic nervous system (cont.)	1.1.1, 1.1.2, 2.1.1, 2.1.2, 2.2.1, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.4.2, 3.2.1, 3.23, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 3	Pharmacological actions of drugs acting on autonomic nervous system (cont.)	1.1.1, 1.1.2, 2.1.1, 2.1.2, 2.2.1, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.4.2, 3.2.1, 3.23, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 4	Pharmacological actions of drugs acting on autonomic nervous system (cont.)	1.1.1, 1.1.2, 2.1.1, 2.1.2, 2.2.1, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.4.2, 3.2.1, 3.23, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 5	Pharmacological actions of drugs acting on autonomic nervous system (cont.)	1.1.1, 1.1.2, 2.1.1, 2.1.2, 2.2.1, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.4.2, 3.2.1, 3.23, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 6	Pharmacological actions of	1.1.1, 1.1.2,	Lectures, E-learning,	Written, practical

	drugs acting on autonomic nervous system (cont.)	2.1.1, 2.1.2, 2.2.1, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.4.1, 2.4.2, 3.2.1, 3.2.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4	practical training and class activities	and oral exams
Week # 7	Semester work			
Week # 8	Pharmacological actions of drugs acting on cardiovascular system	1.1.3, 1.1.4, 1.1.5, 1.1.6, 2.1.2, 2.4.1, 2.4.2, 3.2.2, 3.2.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 9	Pharmacological actions of drugs acting on cardiovascular system (cont.)	1.1.3, 1.1.4, 1.1.5, 1.1.6, 2.1.2, 2.4.1, 2.4.2, 3.2.2, 3.2.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 10	Pharmacological actions of drugs acting on cardiovascular system(cont.)	1.1.3, 1.1.4, 1.1.5, 1.1.6, 2.1.2, 2.4.1, 2.4.2, 3.2.2, 3.2.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 11	Pharmacological actions of drugs acting on cardiovascular system (cont.)	1.1.3, 1.1.4, 1.1.5, 1.1.6, 2.1.2, 2.4.1, 2.4.2, 3.2.2, 3.2.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures, E-learning, practical training, seminars and class activities	Written, practical and oral exams
Week # 12	Pharmacological actions of drugs acting on cardiovascular	1.1.3, 1.1.4, 1.1.5, 1.1.6, 2.1.2, 2.4.1,	Lectures, E-learning, seminars and practical	Written, practical and oral exams

	system (cont.)	2.4.2, 3.2.2, 3.2.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4	training	
Week # 13	Pharmacological actions of drugs acting on cardiovascular system (cont.)	1.1.3, 1.1.4, 1.1.5, 1.1.6, 2.1.2, 2.4.1, 2.4.2, 3.2.2, 3.2.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures and E-learning	Written, practical and oral exams
Week # 14	Pharmacological actions of drugs acting on cardiovascular system (cont.)	1.1.3, 1.1.4, 1.1.5, 1.1.6, 2.1.2, 2.4.1, 2.4.2, 3.2.2, 3.2.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures and E-learning	Written and oral exams
Week # 15	Revision	1.1.3, 1.1.4, 1.1.5, 1.1.6, 2.1.2, 2.4.1, 2.4.2, 3.2.2, 3.2.3, 4.2.1, 4.2.2, 4.2.3, 4.2.4	Lectures and E-learning	Written and oral exams

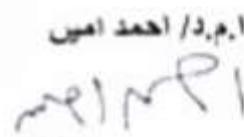
Name and Signature
Course Coordinator

Prof. Dr. Sherin zakaria



Name and Signature
Program Coordinator

Prof. Dr. Ahmed Amin





Course Specification

2025

1. Basic Information

Course Title (according to the bylaw)	General microbiology and genetics			
Course Code (according to the bylaw)	PM 401			
Department/s participating in delivery of the course	Microbiology and immunology department			
Number of credit hours/points of the course (according to the bylaw)	Theoretical	Practica I	Other (specify)	Total
	2	1	----	3
Course Type	Compulsory			
Academic level at which the course is taught	Second level , Semester 2			
Academic Program	Bachelor of Pharmacy (Pharm D clinical program)			
Faculty	Faculty of Pharmacy			
University	Kafrelsheikh University			
Name of Course Coordinator	DR. Nesma maged			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council)	Department Council			

2. Course Overview

This course covers a combination of laboratory and theoretical experience exploring the general aspects of microbiology. It includes knowledge of microorganisms, their morphology, diversity, cell structure and function, cultural characteristics, growth, metabolism, role of microorganisms in infectious diseases and microbial pathogenesis. It also clarifies different mechanisms of transport across bacterial cell membrane, metabolic pathways and physiology of bacteria. The course also covers the principles of genetic characters including DNA and RNA structures, replication, different forms of mutation and mutagenic agents. It also explores the basic concepts microbial growth, cultivation and reproduction.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		Upon finishing this course, students will be able to integrate knowledge from basic microbiology and genetics science to know the different types of microbes, methods of cultivation and microbial genome structures. This competency will be developed via the following key elements:	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Identify microbial structures and functions (e.g., cell wall, membrane, organelles).
		1.1.2	Classify microorganisms based on taxonomy (bacteria, viruses, fungi, protozoa).
		1.1.3	Recognize microbial growth, reproduction, and nutritional requirements.
		1.1.4	Explain the structure and function of prokaryotic and eukaryotic cells .

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		1.1.5	Describe genetic engineering, molecular biology, and principles of bioinformatics
DOMAIN 3: pharmaceutical care 3-1- COMPETENCY		<p>Upon finishing this course, students will be able to apply the principles of general microbiology and genetics to monitor and control microbial growth and participate in identification of the cause of the disease, manage diseases and infection control ...</p> <p>This competency will be developed via the following key elements:</p>	
3.1.2 Apply the principles of public health and pharmaceutical microbiology to select and assess proper methods of infection control.		3.1.1	Identify common bacterial, viral, and fungal pathogens relevant to public health concerns
		3.1.2	Use the microbiological information in prevention and control of different types of infections.
		3.1.3	Apply aseptic techniques to prevent microbial contamination in pharmaceutical and healthcare settings.
		3.1.4	Apply biosafety and biosecurity measures in laboratory and clinical settings to prevent disease transmission.
Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
3.1.3 Monitor and control microbial growth and carry out laboratory tests for identification of infections/diseases		3.1.5	Identify microorganisms through microscopy, staining, and biochemical tests.
		3.1.6	Apply culture-based techniques for microbial identification
		3.1.7	Utilize aseptic techniques for safe handling of microorganisms in laboratory setting

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		3.1.8	Interpret results from laboratory tests to confirm bacterial identification.
3.1.4	Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases and their chemotherapeutic approaches	3.1.9	Identify microorganisms (bacteria, viruses, and Fungs)
		3.1.10	Apply laboratory techniques to identify microorganisms.

4. Teaching and Learning Methods

- 1- Lectures (✓)
- 2- E-learning (✓)
- 3- Practical training/ laboratory (✓)
- 4- Assignment (✓)
- 5- Presentation (✓)
- 6- Virtual lab (✓)
- 7- Discussion (✓)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/.....)	Training (Practical/ Clinical/.....)	Self-learning (Tasks/ Assignments/ Projects/...)	Other (to be determined)
1	Introduction (eukaryotic & prokaryotic) and microbial diversity	4	2	2		
2	Characterization, classification and identification of bacteria.	4	2	2		
3	Morphology and fine structures of prokaryotes.	4	2	2		
4	Cell wall of bacteria	4	2		2	
5	Structure internal to cell wall	4	2	2		
6	Transport of solutes across cell membrane	4	2	2		
7	Periodical exam					
8	Cultivation of bacteria	4	2	2		
9	Bacterial physiology	4	2	2		
10	Reproduction and growth of bacteria	4	2	2		
11	Macromolecular biosynthesis in bacteria	4				

			2	2		
12	Structure and classification of fungi	4	2	2		
13	Ultrastructure and classification of viruses	4	2	2		
14	Introduction of genetic engineering & molecular biology	2	2	Practical exam		
15	Principles of bioinformatics	2	2	Practical exam		

5. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Exam1 written (formative exam)	Week 6	Training	-----
2	Periodical exam	Week 7	15	15%
3	Final Written Exam	Week 16 -17	50	50%
4	Final Practical Exam	Week 14-15	25	25%
5	Final Oral Exam	Week 16-17	10	10%
6	Assignments /Portfolio/ Logbook	Week13-14	---	---

6. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.)	The main (essential) reference for the course (must be written in full according to the scientific documentation method)	Microbiology: An Introduction (13 th Edition). Tortora, Funke and Case.2020. Brock Biology of Microorganisms (14th Edition) 2020. Madigan, Martinko, Bender, Buckley. Bruslind, Linda. "General microbiology ." (2023) Parker, N., Schneegurt, M., Tu, A. H. T., Lister, P., & Forster, B. M Microbiology (2021).
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	Other References	Notes and Lab manual prepared by the department staff.
	Electronic Sources (Links must be added)	www.sciencedirect.com http:// www.ekb.eg
	Learning Platforms (Links must be added)	https://lms3.kfs.edu.eg/pharm/login/index.php
Supportive facilities & equipment for teaching and learning	Devices/Instruments	Laboratory facilities (Equipment of factory).
	Supplies	Incubator, autoclave and other lab instruments
	Electronic Programs	----
	Skill Labs/ Simulators	----
	Virtual Labs	----
	Other (to be mentioned)	Data show, smart board, Unit for distance learning, Computers, Internet and Library.

Course Plan

Course CLOs Matrix-Teaching and Learning Strategy and Student Assessment

Course title: general microbiology and genetics

Course code: PM 401

Week #	Course content	Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Introduction (eukaryotic & prokaryotic) and microbial diversity	1.1.1, 1.1.2 1.1.4 3.1.1. 3.1.3 3.1.4	Lectures, E-learning, and practical training,	practical , written and oral exams
Week # 2	Characterization, classification and identification of bacteria.	1.1.2. 1.1.4. 3.1.1 3.1.2. 3.1.3. 3.1.4 3.1.5. 3.1.7. 3.1.8. 3.1.9. 3.1.10	Lectures, E-learning, practical training, and Discussion	practical , written and oral exams
Week # 3	Morphology and fine structures of prokaryotes.	1.1.1, 1.1.4 3.1.1 3.1.2 3.1.3 3.1.4 3.1.5 3.1.7	Lectures, E-learning, practical training and Virtual lab,	practical , written and oral exams
Week # 4	Cell wall of bacteria	1.1.1, 1.14 3.1.1 3.1.2 3.1.3 3.1.4 3.1.5 3.1.7	Lectures, E-learning and practical training	practical ,final and oral exams
Week # 5	Structure internal to cell wall	1.1.1. 1.1.4 3.1.2 3.1.3. 3.1.4 3.1.7	Lectures, E-learning, practical training and virtual lab	practical , written and oral exams

Week # 6	Transport of solutes across cell membrane	1.1.1 1.1.3 1.1.4 3.1.2 3.1.3 3.1.4 3.1.7	Lectures, E-learning and practical training.	practical , written and oral exams
Week # 7	Periodical exam			
Week # 8	Cultivation of bacteria	3.1.2 3.1.3. 3.1.4 3.1.6. 3.1.7	Lectures, E-learning, practical training, and Discussion	practical , written and oral exams
Week # 9	Bacterial physiology	1.1.1 1.1.3 1.1.4 3.1.2 3.1.3 3.1.4 3.1.7	Lectures, E-learning and practical training	Practical, written and oral exams
Week # 10	Reproduction and growth of bacteria	1.1.3 3.1.2. 3.1.3. 3.1.4 3.1.7	Lectures, E-learning and practical training	Practical, written and oral exams
Week # 11	Macromolecular biosynthesis in bacteria	1.1.3 3.1.2 3.1.3 3.1.4 3.1.7	Lectures, E-learning, practical training and Assignment	Practical, written and oral exams
Week # 12	Structure and classification of fungi	1.1.1. 1.1.2. 1.14 3.1.2 3.1.3. 3.1.4. 3.1.7. 3.1.9	Lectures, E-learning, practical training, and presentation	practical , written and oral exams
Week # 13	Ultrastructure and classification of viruses	1.1.1, 1.1.2, 1.1.4 3.1.2 3.1.3 3.1.4 3.1.9	Lectures, presentation, assignment and E-learning	Practical, written and oral exams
Week # 14	Introduction of genetic engineering & molecular biology	3.1.4 3.1.5	Lectures, assignment, and E-learning	Written and oral exams
Week # 15	Principles of bioinformatics	3.1.4 3.1.5	Lectures, Discussion and E-learning	Written and oral exams

Name and Signature

Course Coordinator

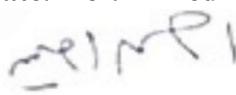
Dr.Nesma Elkemary



Name and Signature

Program Coordinator

Associate.Prof.Ahmed Amin



Course Specification

2025

1. Basic Information

Course Title (according to the bylaw)	Immunology			
Course Code (according to the bylaw)	PM 402			
Department/s participating in delivery of the course	Microbiology and immunology department			
Number of credit hours/points of the course (according to the bylaw)	Theoretical	Practica I	Other (specify)	Total
	1	0	----	1
Course Type	Compulsory			
Academic level at which the course is taught	Second level , second semester			
Academic Program	Bachelor of Pharmacy (Pharm D clinical program)			
Faculty	Faculty of Pharmacy			
University	Kafrelsheikh University			
Name of Course Coordinator	Dr. Nesma Elkemary			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council)	Department Council			

2. Course Overview (Brief summary of scientific content)

The course provides students concepts of medical immunology, with an emphasis on host-parasite relationship, Non-specific and specific immunity, Mechanism of protective immunity. Molecular and cellular immunology, including antigen and antibody structure, function and reaction between them, effector mechanisms, complement, and cell mediated immunity. Active and passive immunization. Hypersensitivity and in vitro antigen antibody reactions, Immuno-deficiency disorders, Autoimmunity and auto-immune disease, organ transplantation.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		Upon finishing this course, students will be able to integrate knowledge from basic medical immunology to understand the human immune system and different immune and auto immune disorders This competency will be developed via the following key elements:	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	the structure and major components of the human mammalian immune system
		1.1.2	the functions of primary and secondary lymphoid organs and immune cells
		1.1.3	Identify examples of immune dysregulation, such as hypersensitivity, immunodeficiency and autoimmunity
		1.1.4	Recognize the mechanisms of innate immunity including physical, chemical, and cellular defenses.
1.1.5	Retrieve information from fundamental sciences to solve therapeutic	1.1.5	Recall fundamental concepts of the immune system, including cells, organs, and molecules of immunity

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	problems.	1.1.6	Apply immunological principles to explain the pathogenesis of immune-related diseases
		1.1.7	Relate laboratory immunological tests to diagnosis and therapeutic decision-making
1.1.7	Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.	1.1.8	Identify newly emerging immunological challenges impacting the pharmaceutical industry
		1.1.9	Compare traditional and modern immune-targeted therapeutic strategies
		1.1.10	Assess the potential risks and benefits of innovative immunological treatments
		<p>Upon finishing this course, students will be able to actively share professional decisions and proper actions to save patient's life in emergency situations including immuno-responses and hypersensitivity toward various drugs or during the process of organ transplantation.</p> <p>This competency will be developed via the following key elements:</p>	
2.4.2	Demonstrate understanding of the first aid measures needed to save patient's life.	2.4.1	Describe immune-mediated emergency conditions such as anaphylaxis and severe allergic reactions
		2.4.2	Identify early immunological warning signs of life-threatening conditions (e.g., airway swelling, systemic urticaria)
		2.4.3	Illustrate first aid measures for immune-mediated angioedema and acute asthma exacerbations
		2.4.4	Explain immediate care steps for immunocompromised patients with acute infections
2.4.3	Take actions to solve any identified medicine-related and	2.4.5	Identify medicine-related problems in patients receiving immunomodulatory or immunosuppressive therapy

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	pharmaceutical care problems.	2.4.6	Recommend appropriate adjustments in immunotherapy regimens to optimize patient outcomes
		2.4.7	Evaluate the effectiveness of interventions in resolving immune-related medication problems.
2.4.4	Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens	2.4.8	Apply immunological assays (e.g., ELISA) to detect toxins or immune biomarkers in biological specimens
		2.4.9	Analyze mechanisms by which xenobiotics modulate or suppress immune responses
2-5- COMPETENCY		Upon finishing this course, Students will be able to contribute to immunology-related pharmaceutical research and clinical studies essential for developing and authorizing immune-based therapies and medicinal products. This competency will be developed via the following key elements:	
2.5.2	Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession.	2.5.1	Apply evidence-based guidelines in the selection and monitoring of immunological therapies
		2.5.2	Interpret clinical and laboratory data relevant to immunotherapy and immune disorders
		2.5.3	Evaluate research evidence on the efficacy and safety of immune-based treatments
Domain 3: Pharmaceutical Care 3-1 - Competency		Upon finishing this course, students will be able to apply immunological principles of body functions to participate in improving health care services using evidence-based data. This competency will be developed via the following key elements:	
3.1.1		3.1.1	Explain the genetic and genomic basis of immune system development and regulation

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	Apply the principles of body function and the basis of genomics in health and disease states to manage different diseases.	3.1.2	Evaluate the role of genomics in predicting treatment outcomes and adverse immune reactions
		3.1.3	Analyze genomic variations associated with immune-related diseases (e.g., autoimmune disorders, immunodeficiencies)
3.1.2	Apply the principles of public health and pharmaceutical microbiology to select and assess proper methods of infection control.	3.1.4	Explain the role of the immune system in natural and acquired protection against pathogens
		3.1.5	Identify immune-based strategies for infection control, including vaccination and passive immunization.
		3.1.6	Interpret epidemiological data related to immune-preventable infectious disease.
3.1.3	Monitor and control microbial growth and carry out laboratory tests for identification of infections/diseases.	3.1.7	Describe immune mechanisms involved in controlling microbial growth within the host
		3.1.8	Interpret laboratory test results to confirm infectious diseases and assess immune status
		3.1.9	Integrate laboratory findings with clinical and immunological data to guide infection management
3.1.4	Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutic approaches.	3.1.10	Discuss the epidemiology and modes of transmission of immune-mediated and infectious conditions.
		3.1.11	Identify appropriate laboratory diagnostic tests for detecting immune-related and infectious diseases.
		3.1.12	Define the etiology of immune-related and infectious diseases, including causative agents
3-2- COMPETENCY		Upon finishing this course, students will be able to provide counseling and education services to patients and communities about safe and rational use of immunological therapies , vaccines and related medical devices .	

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		This competency will be developed via the following key elements:	
3.2.4	Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.	3.2.1	Outline the sources and categories of drugs and xenobiotics capable of inducing immunotoxicity.
		3.2.2	Discuss mechanisms by which xenobiotics affect or suppress immune system function.
		3.2.3	Perform appropriate immunological and biochemical tests to detect toxic agents in biological specimens.
		3.2.4	Formulate management and control strategies for immunotoxic conditions.

4. Teaching and Learning Methods

- 1- Lectures (✓)
- 2- E-learning (✓)
- 3- presentation (✓)
- 4- Assignment (✓)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/)	Training (Practical /Clinical/)	Self-learning (Tasks/Assignments/Projects/...)	Other (to be determined)
1	Host parasit relationship- structure of immune system	1	1			
2	Innate immune system	1		1		
3	Non specific immune response	1		1		
4	Aquired immune system, antigen and antibody structure	1		1		
5	Biological functions and genetics of immunoglobulin	1		1		
6	Hypersensitivity reactions (type I, II)	1		1		
7	Periodical exam	1		1		
8	Hypersensitivity reactions (type III, IV)	1		1		
9	Autoimmunity&autoimmune diseases	1		1		
10	Autoimmunity&autoimmune diseases	1		1		
11	1ry and 2ndy immunodeficiency disease	1		1		

12	1ry and 2ndy immunodeficiency disease	1	1			
13	Organ transplantation	1	1			
14	Organ transplantation	1	1			
15	Revision	1	1			

5. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Exam 1written (formative exam)	6	---	---
2	Periodical exam	7	15	15%
3	Final Written Exam	(16-17)	75	75%
4	Final Oral Exam	(16-17)	10	10%
5	Assignment	(13-14)	---	---

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course (must be written in full according to the scientific documentation method)	- Rich, Robert R., et al., eds. Clinical Immunology E-Book: Principles and Practice. Elsevier Health Sciences, 2022. - Parija, Subhash Chandra. Textbook of microbiology and immunology. Berlin, Heidelberg, Germany: Springer, 2023.
	Other References	Notes on Immunology prepared by department staff members.
	Electronic Sources (Links must be added)	www.pubmed.com www.sciencedirect.com
	Learning Platforms (Links must be added)	https://lms3.kfs.edu.eg/pharm/login/index.php
Supportive facilities & equipment for teaching and learning *	Devices/Instruments	----
	Supplies	----
	Electronic Programs	----
	Skill Labs/ Simulators	----
	Virtual Labs	----
	Other (to be mentioned)	<ul style="list-style-type: none"> ▪ Class rooms, Data show, smart board, Unit for distance learning, Computers, Internet and Library.

Course Plan

Matrix of course learning outcomes CLOs – Teaching and Learning Strategy and Student Assessment

Course title: Immunology Course code: PM 402

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Host parasit relationship-structure of immune system	1.1.1, 1.1.2, 1.1.5, 3.1.7	Lectures and E-learning,	Written and oral exams
Week # 2	Innate immune system	1.1.2, ,1.1.4, 2.4.4, 2.4.9, 3.1.4, 3.1.8, 3.1.9, 3.1.10	Lectures and E-learning,	Written and oral exams
Week # 3	Non specific immune response	1.1.5, 1.1.8, 2.4.9, 3.1.4, 3.1.8, 3.1.9, 3.1.10	Lectures and E-learning,	Written and oral exams
Week # 4	Aquired immune system, antigen and antibody structure	1.1.2, ,1.1.8, 1.1.10, 2.4.9, 3.1.4, 3.1.10, 3.1.11	Lectures and E-learning,	Written and oral exams
Week # 5	Biological functions and genetics of immunoglobulin	1.1.9, 1.1.10, 2.4.6 2.4.8, 2.5.11, 3.1.4, 3.1.10	Lectures, presentation and E-learning,	Written and oral exams
Week # 6	Hypersensitivity reactions (type I, II)	1.1.3, 1.1.6, 2.4.1, 2.4.2, 2.4.3, 2.4.9, 2.5.1, 3.1.2, 3.1.12, 3.2.4	Lectures and E-learning,	Written and oral exams
Week # 7	Periodical exam			
Week # 8	Hypersensitivity reactions (type III, IV)	1.1.3, 1.1.6, 2.4.1, 2.4.2, 2.4.3, 2.4.9, 2.5.1, 3.1.2, 3.1.12, 3.2.4	Lectures and E-learning,	Written and oral exams
Week # 9	Autoimmunity&autoimmune diseases	1.1.3, 1.1.6, 2.4.3, 2.4.4, 2.4.5, 2.4.8, 2.51, 3.1.3, 3.1.9, 3.2.3	Lectures, presentation and E-learning,	Written and oral exams
Week # 10	Autoimmunity&autoimmune diseases	1.1.3, 1.1.6, 2.4.3, 2.4.4, 2.4.5, 2.4.8, 2.51, 3.1.3, 3.1.9, 3.2.3	Lectures and E-learning,	Written and oral exams
Week # 11	1ry and 2ndy immunodeficiency disease	1.1.6, 1.1.7, 1.1.10, 2.4.4, 2.4.5, 2.5.1, 2.4.6, 2.5.2	Lectures and E-learning,	Written and oral exams

Week # 12	1ry and 2ndy immunodeficiency disease	1.1.6, 1.1.7, 1.1.10, 2.4.4, 2.4.5, 2.5.1, 2.4.6, 2.5.2	Lectures and E- learning,	Written and oral exams
Week # 13	Organ transplantation	1.1.6, 1.1.7, 1.1.9, 1.1.10, 2.4.6, 2.4.7, 2.4.8, 2.5.1, 2.5.3, 3.1.1, 3.1.2, 3.1.5, 3.2.1, 3.2.3	Lectures, Assignment and E- learning	Written and oral exams
Week # 14	Organ transplantation	1.1.6, 1.1.7, 1.1.9, 1.1.10, 2.4.6, 2.4.7, 2.4.8, 2.5.1, 2.5.3, 3.1.1, 3.1.2, 3.1.5, 3.2.1, 3.2.3	Lectures, Assignment and E- learning	Written and oral exams
Week # 15	Revision	1.1.3, 1.1.6, 1.1.9, 2.4.1, 2.4.7, 2.5.1, 3.1.2, 3.1.7, 3.2.4	Lectures and E- learning	Written and oral exams

Name and Signature

Course Coordinator

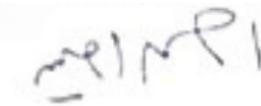
Dr. Nesma Elkemary



Name and Signature

Program Coordinator

Prof. Ahmed Amin Ali



Course Specification (2025)

1. Basic Information

Course Title (according to the bylaw)	Scientific Writing and Communication Skills			
Course Code (according to the bylaw)	NP 402			
Department/s participating in delivery of the course	Pharmaceutical Chemistry Department			
Number of credit hours/points of the course (according to the bylaw)	Theoretical	Practical	Other (specify)	Total
	1	----	-----	1
Course Type	Compulsory			
Academic level at which the course is taught	Second level, semester (2)			
Academic Program	Bachelor of Pharmacy (PharmD) (Clinical Pharmacy)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Associate. Prof. Wagdy Mohamed Eldehna			
Course Specification Approval Date	9/2025			
Course Specification Approval	Department Council			

2. Course Overview (Brief summary of scientific content)

- **Enhance Written Communication:** Develop students' ability to effectively and clearly communicate in writing, ensuring accuracy and professionalism in pharmaceutical documentation, reports, and correspondence.
- **Improve Oral Communication:** Equip students with the skills to confidently and effectively communicate verbally with patients, colleagues, and other healthcare professionals, facilitating clear and empathetic exchanges.
- **Develop Presentation Skills:** Foster students' abilities to create and deliver compelling presentations, utilizing appropriate visual aids and technology, to educate and inform diverse audiences about pharmaceutical topics.
- **Promote Inter-professional Collaboration:** Strengthen students' understanding of the importance of teamwork in healthcare settings, enhancing their ability to collaborate with other healthcare providers to improve patient outcomes.
- **Enhance Patient Communication:** Improve students' skills in patient education and counseling, ensuring they can effectively convey complex medical information in an understandable and compassionate manner to support patient care and adherence.

Also, upon successful completion of this course, the students will develop various competencies based on covering the following general outlines:

Basic information that introduces students to the principles of good scientific writing to be familiar with the basic structure of scientific reports and research articles to cover:

- 1- Methods of paraphrasing and common mistakes in scientific writing.
- 2- Different writing styles and how to write a scientific report.
- 3- Proposal and manuscript to use tables and figures in data presentation.
- 4- Evaluation of literature and information sources.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 1 (Fundamental Knowledge) 1-1-COMPETENCY		Upon completing this course, students will be able to integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care. This competency will be developed via the following key elements:	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical,	1.1.1	Explain the role of communication in patient-centered care and interdisciplinary teamwork.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	biomedical, social, behavioral, administrative, and clinical sciences.	1.1.2	Recognize how social and behavioral sciences shape health communication strategies.
		1.1.3	Relate communication models to clinical and administrative decision-making.
		1.1.4	Identify barriers to communication in healthcare settings and methods to overcome them.
		1.1.5	Use accurately pharmaceutical and biomedical topics and incorporating relevant scientific terminology and concepts.
		1.1.6	Integrate clinical and administrative sciences in writing reports, reviews, and case studies and writing clear recommendations for patient care plans, drug utilization reviews.
1.1.5	Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.	1.1.7	Apply scientific communication in presenting pharmaceutical information to specialists and non-specialists.
		1.1.8	Use correct terminology and scientific language in oral and written reports.
		1.1.9	Develop skills to simplify complex pharmaceutical concepts for patients and communities.
		1.1.10	Retrieve and synthesize scientific data from basic sciences to write evidence-based therapeutic recommendations.
		1.1.11	Apply writing skills related to the retrieval of primary scientific sources (journals, research papers) and apply them effectively in solving therapeutic issues.
1.1.6	Utilize scientific literature and collect and interpret information to enhance professional decisions.	1.1.12	Practice reading and summarizing research articles effectively.
		1.1.13	Develop skills in writing professional reports, abstracts, and summaries.
		1.1.14	Communicate evidence-based information clearly to patients and healthcare teams.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		1.1.15	Interpret scientific articles, clinical trials, and other literature to improve writing and decision-making.
1.1.7	Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.	1.1.16	Debate and present current healthcare and pharmaceutical issues in professional discussions.
		1.1.17	Communicate ethical concerns regarding new trends to diverse audiences.
		1.1.18	Identify and write about the latest breakthroughs, clinical trials, drug approvals, or technological innovations in pharmacy and healthcare.
		1.1.19	Write about the impact of new healthcare policies, regulations, or legislation on pharmaceutical practice.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-1- COMPETENCY		Upon completing this course, students will be able to work collaboratively as a member of an inter-professional health care team to improve the quality of life of individuals and communities and respect patients' rights. This competency will be developed via the following key elements:	
2.1.1	Perform responsibilities and authorities in compliance with the legal and professional structure and role of all members of the health care professional team.	2.1.1	Demonstrate professional communication etiquette within healthcare teams.
		2.1.2	Apply effective negotiation and conflict resolution skills in team interactions.
		2.1.3	Communicate legal and ethical responsibilities clearly to peers and patients.
		2.1.4	Respect professional roles through appropriate verbal and non-verbal.
2.1.2	Apply the basic requirements of quality management system in	2.1.5	Communicate quality-related information effectively across teams.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/products considering various incompatibilities.	2.1.6	Use standardized documentation practices in reporting quality measures.
2.1.3	Recognize the principles of various tools and instruments and select the proper techniques for synthesis and analysis of different materials and production of pharmaceuticals.	2.1.7	Communicating laboratory results effectively through written reports and oral presentations.
		2.1.8	Use clear language to explain technical processes to non-experts.
		2.1.9	Document laboratory findings in compliance with professional standards.
2-5- COMPETENCY		Upon completing this course, students will be able to contribute to pharmaceutical research studies and clinical trials needed to authorize medicinal products. This competency will be developed via the following key elements:	
2.5.2	Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession.	2.5.1	Learn how to efficiently search for and retrieve relevant scientific literature from databases and refine search queries, using appropriate search tools and filters.
		2.5.2	Develop the ability to assess the quality and reliability of scientific studies, understanding study designs, statistical methods, and biases and recognize the strengths and weaknesses of different types of evidence.
2.5.3	Contribute to planning and conducting research studies using appropriate methodologies.	2.5.3	Design various research experiments and learn how to select the appropriate design based on research questions and objectives.
		2.5.4	Design surveys, collect data, using statistical tools to analyze data, and interpreting data outcomes.
2-6- COMPETENCY		Upon completing this course, students will be able to perform pharmacoeconomic analysis and develop promotion, sales, marketing, and business administration skills.	

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		This competency will be developed via the following key elements:	
2.6.2	Contribute to planning and conducting research studies using appropriate methodologies.	2.6.1	Write research reports using academic communication standards.
		2.6.2	Present research findings effectively to professional and lay audiences.
		2.6.3	Collaborate with research teams using effective interpersonal communication.
DOMAIN 3: Pharmaceutical care 3-2- COMPETENCY		Upon completing this course, students will be able to provide counseling and education services to patients and communities about safe and rational use of medicines and medical devices. This competency will be developed via the following key elements:	
3.2.3	Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.	3.2.1	Identify and evaluate reliable sources of evidence on phytotherapy, aromatherapy, and nutraceuticals
		3.2.2	Translate complex scientific evidence into clear, accessible language for different audiences.
3.2.5	Educate and counsel patients, other health care professionals, and communities about safe and proper use of medicines including OTC preparations and medical devices.	3.2.3	Counsel patients using simple, patient-centered communication.
		3.2.4	Demonstrate active listening and empathy during patient education.
		3.2.5	Use visual aids and simplified language for community drug education.
		3.2.6	Collaborate with healthcare professionals to ensure consistent patient messaging.
		3.2.7	Develop the scientific writing aspect, and create patient-friendly leaflets, infographics, or online resources.
3.2.6		3.2.8	Develop and deliver public awareness campaigns using effective communication.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	Maintain public awareness on social health hazards of drug misuse and abuse.	3.2.9	Write educational materials (posters, brochures, digital content) addressing misuse/abuse.
		3.2.10	Use persuasive communication to influence behavioral change.
DOMAIN 4: Personal Practice 4-1- COMPETENCY		<p>Upon completing this course, students will be able to express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.</p> <p>This competency will be developed via the following key elements:</p>	
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.	4.1.1	Provide constructive feedback using professional communication.
		4.1.2	Facilitate effective group discussions and meetings.
		4.1.3	Develop skills for effective teamwork in scientific writing projects, including peer review processes and constructive feedback and encourage team collaboration and peer evaluation of writing drafts, fostering teamwork and responsibility for collective output.
		4.1.4	Organize writing tasks to meet deadlines, demonstrating the ability to allocate time effectively for research, drafting, and revision processes.
4.1.2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	4.1.5	Communicate solutions clearly in team problem-solving discussions.
		4.1.6	Present evidence-based arguments during group decision-making.
		4.1.7	Adapt communication styles to team dynamics.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		4.1.8	Apply the skills of sourcing credible scientific literature, analyzing data, and critically assessing sources for the purpose of writing a robust research paper.
		4.1.9	Recognize gaps in knowledge, formulate research questions, for problem-solving aspect and identify issues in writing research and propose solutions.
4.1.3	Demonstrate creativity and apply entrepreneurial skills within a simulated entrepreneurial activity.	4.1.10	Pitch innovative healthcare communication projects effectively.
		4.1.11	Use persuasive techniques in presenting entrepreneurial ideas.
		4.1.12	Develop promotional communication for pharmaceutical products.
		4.1.13	Foster creativity in presenting research findings in novel and engaging ways, such as through clear, compelling arguments or unique angles in scientific writing.
		4.1.14	Develop skills to communicate scientific research clearly and persuasively to a non-expert audience, thereby increasing the impact of the research.
4-2- COMPETENCY		Upon completing this course, students will be able to effectively communicate verbally, non-verbally and in writing with individuals and communities. This competency will be developed via the following key elements:	
4.2.1	Demonstrate effective communication skills verbally, non-verbally, and in	4.2.1	Apply clear and empathetic verbal communication with patients.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	writing with professional health care team, patients, and communities.	4.2.2	Demonstrate professional non-verbal skills (body language, eye contact).
		4.2.3	Write concise and accurate professional documents.
		4.2.4	Adapt communication style to healthcare teams vs. public audiences
		4.2.5	Use techniques for clear, concise, and empathetic writing with patients, healthcare providers, and interdisciplinary teams.
4.2.2	Use contemporary technologies and media to demonstrate effective presentation skills.	4.2.6	Develop digital presentations using modern tools (PowerPoint, Prezi, Canva).
		4.2.7	Deliver presentations with confidence using multimedia aids.
		4.2.8	Use social media and digital platforms for professional communication.
		4.2.9	Record and evaluate self-presentations for improvement.
		4.2.10	Design visuals (charts, graphs, diagrams) to effectively communicate data and research findings.
4-3- COMPETENCY		<p>Upon completing this course, students will be able to express self-awareness and be a life-long learner for continuous professional improvement.</p> <p>This competency will be developed via the following key elements:</p>	
4.3.1	Perform self-assessment to enhance professional and personal competencies.	4.3.1	Reflect on personal communication strengths and weaknesses.
		4.3.2	Set goals for improving communication skills in professional contexts.
		4.3.3	Seek and respond to feedback from peers and instructors.
		4.3.4	Develop the ability to evaluate personal strengths and weaknesses in scientific writing and encouraging students to critically assess

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
			their writing skills, identify areas for improvement.
		4.3.5	Learn to evaluate the ability to present research findings clearly and effectively, whether through written communication.

4. Teaching and Learning Methods

- 1- **Lectures** (✓)
- 2- **E-learning** (✓)
- 3- **Practical training/ laboratory** (X)
- 4- **Discussion** (✓)
- 5- **Brainstorming** (✓)
- 6- **Assignments** (✓)
- 7- **Case study** (✓)
- 8- **Seminars** (✓)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/ discussion groups/)	Training (Practical/ Clinical/)	Self-learning (Tasks/ Assignments/ Projects/ ...)	Other (to be determined)
1	Principles of Effective Oral and Written Communication Skills	1	1	---	---	---
2	Presentation Skills	1	1	---	---	---
3	Negotiation Skills	1	1	---	---	---
4	Interviewing Skills	1	1	---	---	---
5	Personality Types	1	1	---	---	---
6	Persuasion skills	1	1	---	---	---
7	Mid-term exam					
8	Importance of Teamwork in Health Care Settings	1	1	---	---	---
9	Methods of paraphrasing and common mistakes in scientific writing	1	1	---	---	---
10	Different writing styles and how to write a scientific report.	1	1	---	---	---
11	Proposal, manuscript and how to use tables and figures in data presentation	1	1	---	---	---
12	Evaluation of literature and information sources	1	1	---	---	---
13	Laboratory Notebook	1	1	---	---	---
14	Article Journal metrics	1	1	---		
15	Short Answers	1	1	---		

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Class activity-mid term	Week 7	15 marks	15%
2	Final Written Exam	Week 16,17	85 marks	85%
	Total		100	100%

6. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.)	The main (essential) reference for the course	<ul style="list-style-type: none"> Notes on communication skills Notes on scientific writing communication skills
	Other References	<ul style="list-style-type: none"> "The Art of Communication in Nursing and Health Care: An Interdisciplinary Approach" by Theresa Raphael-Grimm Scientific writing and communication: papers, proposals and presentations. "Writing, Speaking, and Communication Skills for Health Professionals" by Stephanie Barnard clinical skills, guide for pharmacist, 3rd edition Writing science Writing literature reviews The scientist's guide to write Scientific writing and communication: papers, proposals and presentations. Concepts in scientific writing. clinical skills, guide for pharmacist, 3rd edition
Supportive facilities & equipment for teaching and learning	Devices/Instruments	<ul style="list-style-type: none"> - Data show, Computers, Library, Internet. -Interactive boards and distant learning unit
	Supplies	<ul style="list-style-type: none"> - Classrooms.

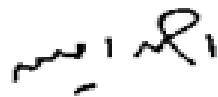
**Name and Signature
Course Coordinator**

Associate. Prof. Wagdy Mohamed
Eldehna



**Name and Signature
Program Coordinator**

Ass. Prof. Ahmed Amin Ali



Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Pathology and pathophysiology			
Course Code (according to the bylaw)	MD 406			
Department/s participating in delivery of the course	Pathology dep., Faculty of Medicine			
Number of credit hours/points of the course (according to the bylaw)	Theoretical	Practical	Other (specify)	Total
	2	----	----	2
Course Type	compulsory			
Academic level at which the course is taught	Second Level, Semester (2)			
Academic Program	Bachelor of Pharmacy (PharmD) (Clinical Pharmacy)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Prof. Eman Said Prof. Hany Borg			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council)	Department council			

2. Course Overview (Brief summary of scientific content)

This course provides the students with knowledge and skills for common diseases affecting body organs and system. It helps the student to understand the causes (etiology) of disease, the mechanisms of its development (pathogenesis) and the associated alterations of structure (morphological changes) and function (clinical manifestations and complications) to be able to determine the most likely diagnosis of the disease. Pathophysiology Introduction to pathophysiology, cell injury, inflammation and immune response, autonomic nervous system in health and disease, endocrine disorders, pancreatic disorders, fluid and electrolyte imbalance, vascular and hematological disorders, disease of urinary, pulmonary and digestive systems.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		On successful completion of the course, the student should be able to efficiently demonstrate the essential knowledge and understanding of pathogenesis and the associated morphological changes. This competency will be developed via the following key elements:	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Demonstrate the different disease processes encountered, their causes (etiology), and how the disease develops in response to the etiologic agents (pathogenesis).
		1.1.2	Demonstrate the characteristic gross and microscopic pictures of different pathologic lesions within specific organ system and the associated functional disturbances .
		1.1.3	Identify the fate and complications of different disease processes.
1.1.2	Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	1.1.4	Utilize the proper medical terms and abbreviations for common diseases affecting body organs and systems.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 3: Pharmaceutical Care 3-1- COMPETENCY		<p>Apply the principles of body functions to participate in improving health care services using evidence-based data.</p> <p>This competency will be developed via the following key elements:</p>	
3.1.1	Apply the principles of body function and basis of genomics in health and disease states to manage different diseases.	3.1.1	Measure of body functions by different laboratory techniques
3.1.4	Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutic approaches.	3.1.2	Apply effectively different diagnostic pathological tools.
		3.1.3	Apply effectively the pathologic pictures of different disorders based on gross and microscopic pictures aiming at reaching a correct diagnosis.
		3.1.4	Monitor and assess the different laboratory techniques for handling pathological samples.

4. Teaching and Learning Methods

- 1- Lectures (✓)
- 2- E-learning (✓)
- 3- Practical training/ laboratory (X)
- 4- Class activity (✓)

Course Schedule						
Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/ discussion groups/)	Training (Practical/ Clinical/)	Self-learning (Tasks/ Assignments / Projects/ ...)	Other (to be determined)
1	Introduction & inflammation	2	2	----	----	----
2	Inflammation & repair	2	2	----	----	----
3	Degeneration	2	2	----	----	----
4	Disturbance of pigment, necrosis & apoptosis	2	2	----	----	----
5	Circulatory disturbances	2	2	----	----	----
6	Circulatory disturbances & gangrene	2	2	----	----	----
7	Periodical exam					
8	Granulomas	2	2	----	----	----
9	Granulomas & mycotic infections	2	2	----	----	----
10	Viral & Protozoal diseases	2	2	----	----	----
11	Genetic disorders & ionizing radiation	2	2	----	----	----
12	Growth disturbances	2	2	----	----	----
13	Neoplasia	2	2	----	----	----
14	Cardiovascular & respiratory systems	2	2	----	----	----
15	Gastrointestinal & Urinary systems	2	2	----	----	----

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Periodical exam	7	15	15%
2	Final Written Exam	16,17	75	75%
3	Final Oral Exam	16,17	10	10%
4	Total		100	100%

6. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course (must be written in full according to the scientific documentation method)	Robbins & Cortan pathologic basis of disease 10 th edition (2020) Crash course pathology by Olivia and Isabel Woodman 5 th edition (2019).
	Other References	Notes manual prepared by the department staff.
	Electronic Sources (Links must be added)	http://www.PATHMAX.com www.cms.nelc.educ.eg
	Learning Platforms (Links must be added)	https://lms3.kfs.edu.eg/pharm/login/index.php
	Other (to be mentioned)	Walter & Israel General pathology 6 th edition . BRS pathology by Schneider and Szanto 5th edition .
Supportive facilities & equipment for teaching and learning *	Devices/Instruments	----
	Supplies	----
	Electronic Programs	----
	Skill Labs/ Simulators	----
	Virtual Labs	----
	Other (to be mentioned)	Classrooms. Projectors (Overhead, video projector) Computers, Internet and Library.

Course Plan

Matrix of course learning outcomes CLOs – Teaching and Learning Strategy and Student Assessment

Course title: Pathology and pathophysiology

Course code: MD 406

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Introduction & inflammation	1.1.1 1.1.4	Lectures and brainstorming	Written and oral exams
Week # 2	Inflammation & repair	1.1.1, 3.1.1, 3.1.2	Lectures and brainstorming	Written and oral exams
Week # 3	Degeneration	1.1.1, 1.1.2, 1.1.4, 3.1.1, 3.1.2,	Lectures and brainstorming	Written and oral exams
Week # 4	Disturbance of pigment ,necrosis & apoptosis	1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2	Lectures and brainstorming	Written and oral exams
Week # 5	Circulatory disturbances	1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2	Lectures and brainstorming	Written and oral exams
Week # 6	Circulatory disturbances& gangrene	1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2	Lectures and brainstorming	Written and oral exams
Week # 7	Periodical exam			
Week # 8	Granulomas	1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2	Lectures and brainstorming	Written and oral exams
Week # 9	Granulomas &mycotic infections	1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2	Lectures and brainstorming	Written and oral exams
Week # 10	Viral & Protozoal diseases	1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2 3.1.3	Lectures and brainstorming	Written and oral exams

Week # 11	Genetic disorders & ionizing radiation	1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2 3.1.3	Lectures and brainstorming	Written and oral exams
Week # 12	Growth disturbances	1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2 3.1.3	Lectures and brainstorming	Written and oral exams
Week # 13	Neoplasia	1.1.1, 1.1.2, 1.1.3, 3.1.1, 3.1.2 3.1.3, 3.1.4	Lectures and brainstorming	Written and oral exams
Week # 14	Cardiovascular & respiratory systems	1.1.1, 1.1.3, 3.1.1, 3.1.2 3.1.3	Lectures and brainstorming	Written and oral exams
Week # 15	Gastrointestinal & Urinary systems	1.1.1, 1.1.3, 3.1.1, 3.1.2 3.1.3, 3.1.4	Lectures and brainstorming	Written and oral exams

Name and Signature

Course Coordinator

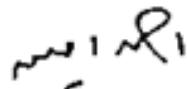
Prof. Eman Said

Prof. Hany Borg

Name and Signature

Program Coordinator

Ass. Prof. Ahmed Amin Ali



Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Pharmaceutical Dosage Forms II			
Course Code (according to the bylaw)	PT 404			
Department/s participating in delivery of the course	Pharmaceutics and Pharmaceutical Technology			
Number of credit hours/points of the course (according to the bylaw)	Theoretical	Practical	Other (specify)	Total
	2	1	----	3
Course Type	compulsory			
Academic level at which the course is taught	Second level, Semester (2)			
Academic Program	Bachelor of Pharmacy (Pharm D.) (Clinical pharmacy)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Prof. Abd El-Aziz El-Said Lecturer. Walid Anwar			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council)	Department council			

2. Course Overview (Brief summary of scientific content)

This course covers the structure and function of the skin, target area of treatment after topical application to skin, basic principles of diffusion through membranes and factors affecting percutaneous absorption, enhancement of skin penetration, transdermal drug delivery systems (TDDS). It also describes the principles and techniques involved in the formulation and manufacturing of traditional dermatological semisolid dosage forms (creams, ointments, gels and pastes) and cosmetic products.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		Upon finishing this course, students will be able to integrate knowledge from basic pharmaceutical science to formulate different classes of semisolid dosage forms as a preliminary step in the manufacture of therapeutic and cosmetic products. This competency will be developed via the following key elements:	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Discuss the factors affecting percutaneous absorption of drugs
		1.1.2	Recognize different methods of enhancing percutaneous absorption of drugs.
		1.1.3	Describe the transdermal therapeutic systems.
		1.1.4	Classify different bases used in formulation of ointments, creams and cosmetic formulation
1.1.3	Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of	1.1.5	Express knowledge of methods of preparation of ointment, creams and cosmetic products.
		1.1.6	Review the role of formulation design and additives in modifying the elegancy and appearance of cosmetic preparation.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
	synthetic/natural pharmaceutical materials/products.	1.1.7	List the specifications of semisolid products.
		1.1.8	Discuss the factors affecting stability of semisolid dosage forms.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-2- COMPETENCY		<p>Upon finishing this course, students will be able to formulate and manufacture different semisolid dosage forms and participate in systems for dispensing, storage, and distribution of all semisolid dosage forms.</p> <p>This competency will be developed via the following key elements:</p>	
2.2.1	Isolate, design, identify, synthesize, purify, analyze and standardize synthetic/natural pharmaceutical materials.	2.2.1	Formulate and prepare creams and ointment according to good pharmaceutical practices.
		2.2.2	Design and adjust formulations considering patient needs and therapeutic requirements
2.2.2	Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.	2.2.3	Apply the rules of manufacturing, storage and transportation of semisolid dosage forms.
		2.2.4	Formulate topical formulations for local and transdermal effects based on pharmaceutical knowledge.
		2.2.5	Understand the fundamental aspects of semisolid cosmetic formulations, which include all formulations intended for cleansing and/or beautifying the human body.
		2.2.6	Select the best enhancer for a given transdermal therapeutic system.
		2.2.7	Select the best topical formulation based on the disease state of the patient and the required effect.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		2.2.8	Recognize factors affecting stability of ointment, creams and other cosmetic formulations.
2.2.3	Recognize the principles of various tools and instruments and select the proper techniques for synthesis and analysis of different materials and production of pharmaceuticals.	2.2.9	Recognize different methods for preparation of semisolid dosage forms
		2.2.10	Predict drug interaction with different bases.
		2.2.11	Select suitable method for characterization of semisolid dosage forms, active ingredient and excipients.
		2.2.12	Assess the quality of topical and cosmetic products.
2.2.4	Adopt the principles of pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and biopharmaceutics and their applications in new drug delivery systems, dose modification, bioequivalence studies, and pharmacy practice.	2.2.13	Recognize principles of pharmaceutical calculation for preparation of semisolid dosage forms including ointment and creams
		2.2.14	Recognize recent knowledge in pharmaceutical technology to design new transdermal drug delivery systems.
2-3- COMPETENCY		<p>Upon finishing this course, students will be able to handle and dispose synthetic/natural pharmaceutical materials used in preparation of semisolid pharmaceutical products effectively and safely with respect to relevant laws and legislations.</p> <p>This competency will be developed via the following key elements:</p>	

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
2.3.1	Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical fields.	2.3.1	Safely handle different chemicals to avoid harm to the students.
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biological, and pharmaceutical materials/products.	2.3.2	Recognize and adopt MSDS safety guidelines for safe and appropriate handling and disposal of pharmaceutical chemical materials.
		2.3.3	Demonstrate the safe use and storage of the ointment, creams and other topical products to the patient.
Domain 4: Personal Practice 4-2- Competency		Upon finishing this course, students will be able to Effectively communicate verbally, non-verbally and in writing with individuals and communities. This competency will be developed via the following key elements:	
4.2.2	Use contemporary technologies and media to demonstrate effective presentation skills.	4.2.1	Perform presentation on the advanced topical drug delivery systems and their benefits.
		4.2.2	Acquire effective presentation skills in modern technology and media to create engaging and memorable experiences. This includes using interactive slides, incorporating multimedia (videos, images, audio), and employing tools for real-time feedback and collaboration. By integrating these elements, student can enhance audience engagement, clarify complex information, and leave a lasting impact.

4. Teaching and Learning Methods

1- Lectures	(✓)
2- E-learning	(✓)
3- Practical training/ laboratory	(✓)
4- Discussion	(✓)
5- Brain - storming	(✓)
6- Assignment	(✓)
7- Presentation	(✓)
8- Case study	(✓)

Course Schedule						
Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/.....)	Training (Practical /Clinical/.....)	Self-learning (Tasks/Assignments / Projects/...)	Other (to be determined)
1	Introduction – Structure and function of the skin- Target area of treatment after topical application to skin	4	2	2	-----	-----
2	Basic principles of diffusion through membranes and factors affecting percutaneous absorption	4	2	2	-----	-----
3	Enhancement of skin penetration	4	2	2	-----	-----
4	Rate controlling transdermal therapeutic system	4	2	2	-----	-----
5	Transdermal Drug Delivery Systems (TDDS)	4	2	2	-----	-----
6	Traditional dermatological formulations- classification of ointment bases (physical classification)	4	2	2	-----	-----
7	Periodical exam					
8	Classification of ointment bases (chemical classification)	4	2	2	-----	-----
9	Preparation of ointment including ophthalmic ointments	4	2	2	-----	-----
10	Creams - types and methods of preparation	4	2	2	-----	-----
11	Cosmetic - Vanishing or day cream - Shaving cream.	4	2	2	-----	-----

12	Cosmetic - Cleansing cream - Sunscreen cream.	4	2	2	-----	-----
13	Cosmetic - Gels	4	2	2	-----	-----
14	Cosmetic - Pastes	4	2	Practical exam	-----	-----
15	Quality control tests for semisolid dosage forms.	4	2	Practical exam	-----	-----

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Periodical exam	7	15	15%
2	Final Practical Exam including practical exam, Assignments and rubric evaluation	14, 15	25	25%
3	Final Written Exam	16, 17	50	50%
4	Final Oral Exam	16, 17	10	10%
	Total		100	100%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.)	The main (essential) reference for the course (must be written in full according to the scientific documentation method)	Vipul A. Sansare, Abhijeet M. Kanavaje, Rehan Uddin, Textbook of Pharmaceutics II (For Second Year Diploma in Pharmacy). 1st Edition, 2021. Kevin Taylor, Michael Aulton, Aulton's Pharmaceutics: The Design and Manufacture of Medicines 6th Edition, 2022. R. M. Mehta, Pharmaceutics II. 4th Edition, 2024.
	Other References	Notes and Lab manual prepared by the department staff.
	Electronic Sources (Links must be added)	www.ncbi.nlm.nih.gov/pmc/ www.ncbi.nlm.nih.gov/pmc/
	Learning Platforms (Links must be added)	https://lms3.kfs.edu.eg/pharm/login/index.php
	Other (to be mentioned)	

Supportive facilities & equipment for teaching and learning	Devices/Instruments	Laboratory facilities (Equipment of factory).
	Supplies	Water bath, digital balances and other lab instruments
	Electronic Programs	----
	Skill Labs/ Simulators	----
	Virtual Labs	----
	Other (to be mentioned)	Data show, smart board, Unit for distance learning, Computers, Internet and Library.

Course Plan

Matrix of course learning outcomes CLOs – Teaching and Learning Strategy and Student Assessment

Course title: Pharmaceutical Dosage Forms-II

Course code: PT 404

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Introduction – Structure and function of the skin- Target area of treatment after topical application to skin	1.1.3, 1.1.5, 2.2.12.	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 2	Basic principles of diffusion through membranes and factors affecting percutaneous absorption	1.1.1, 1.1.3, 2.2.12, 2.2.1	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 3	Enhancement of skin penetration	1.1.1, 1.1.2, 1.1.3, 2.2.2, 2.2.3, 2.2.4, 2.2.12	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 4	Rate controlling transdermal therapeutic system	1.1.2, 1.1.3, 1.1.5, 2.2.1, 2.2.2, 2.2.3, 2.2.12.	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 5	Transdermal Drug Delivery Systems (TDDS)	1.1.1, 1.1.2, 1.1.3, 1.1.5, 2.2.1, 2.2.2, 2.2.3, 2.2.6, 2.2.12	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 6	Traditional dermatological formulations- classification of ointment bases (physical classification)	1.1.4, 1.1.5, 1.1.6, 2.2.1, 2.2.4, 2.2.5, 2.2.8.	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 7	Periodical exam			
Week # 8	classification of ointment bases (chemical classification)	1.1.4, 1.1.5, 1.1.6, 2.2.1,	Lectures, E-learning, practical training and class activities	Written, practical and oral exams

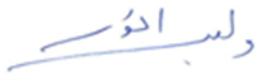
		2.2.4, 2.2.5, 2.2.8.		
Week # 9	Preparation of ointment including ophthalmic ointments	1.1.5, 1.1.6, , 2.2.1, 2.2.5, 2.2.8, 2.3.1, 2.3.2, 2.3.3. 2.2.11, 2.2.12	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 10	Creams - types and methods of preparation	1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.2.1, 2.2.2, 2.2.3, 2.2.7, 2.3.1, 2.3.2, 2.3.3.	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 11	Cosmetic - Vanishing or day cream - Shaving cream.	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 2.2.2, 2.2.5, 2.2.9, 2.2.10, 2.3.1, 2.3.2, 2.3.3.	Lectures, E-learning, practical training, seminars and class activities	Written, practical and oral exams
Week # 12	Cosmetic - Cleansing cream. - Sunscreen cream.	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 2.2.2, 2.2.5 2.2.9 2.2.10, 2.3.1, 2.3.2, 2.3.3.	Lectures, E-learning, seminars and practical training	Written, practical and oral exams
Week # 13	Cosmetic - Gels	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 2.2.2, 2.2.5, 2.2.8, 2.2.9, 2.2.10, 2.3.1, 2.3.2, 2.3.3.	Lectures and E-learning	Written, practical and oral exams
Week # 14	Cosmetic - Pastes	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 2.2.2, 2.2.5, 2.2.8 2.2.9, 2.2.10, 2.3.1, 2.3.3.	Lectures and E-learning	Written and oral exams

Week # 15	Quality control tests for semisolid dosage forms.	1.1.6, 1.1.7, 1.1.8, 2.2.5, 2.2.9, 2.2.10, 2.3.1, 2.3.2.	Lectures and E-learning	Written and oral exams
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Name and Signature

Course Coordinator

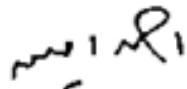
Prof. Abd El-Aziz El-Said
Lecturer. Walid Anwar




Name and Signature

Program Coordinator

Ass. Prof. Ahmed Amin Ali





Course Specification (2025)

1. Basic Information

Course Title (according to the bylaw)	Biochemistry II			
Course Code (according to the bylaw)	PB 403			
Department/s participating in delivery of the course	Biochemistry Department			
Number of credit hours/points of the course (according to the bylaw)	Theoretica 1	Practical 2	Other (specify) 1	Total 3
Course Type	Compulsory			
Academic level at which the course is taught	Second level			
Academic Program	BSc in Pharmacy (Pharm D) (Clinical pharmacy)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh university			
Name of Course Coordinator	Dr\ Shimaa Ali			
Course Specification Approval Date	9-2025			

Course Specification Approval (Attach the decision/minutes of the department /committee/council)	Department council
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2. Course Overview (Brief summary of scientific content)

Upon successful completion of this course, the students will develop various competencies based on covering the following general outlines:

Mobilization of body stores of glycogen and fats, Metabolism and tissue utilization of glucose, amino acids, and fatty acids, Regulation of blood glucose level and clinical correlations, Feed/fast cycle, Nitrogen metabolism and nitrogen balance, Inborn errors of metabolism, Second messengers and signal transduction, Biochemistry of cancer, and aging, Food biochemistry (milk – probiotics), Oxidative stress and body defence mechanisms

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		<p>Upon finishing this course, learn key metabolic and biosynthetic pathways and how the pathways are regulated and connected. Learn about methods used for studying biochemical pathways, improve problem-solving and independent thinking ability, and improve the ability to communicate through written and oral communication</p> <p>This competency will be developed via the following key elements:</p>	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Describe how the body gets energy from metabolism and define the citric acid cycle as an amphibolic pathway.
		1.1.2	Define the catabolic and anabolic pathways of glucose, glycogen, amino acids and lipids and their regulation.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		1.1.3	Explain the basis of feed/fast cycle, diabetes mellitus, obesity, and inborn errors of metabolism.
		1.1.4	Recognize types of ligands and receptors for cellular signaling and identify different types and sources of free radicals and antioxidants, and different components of milk and milk adulterants.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-3- COMPETENCY		<p>Upon finishing this course, students will be able to handle and dispose of biological material and chemicals effectively and safely with respect to relevant laws and legislations.</p> <p>This competency will be developed via the following key elements:</p>	
2-3-1	Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical fields.	2-3-1	Safely handle different chemicals to avoid harm to the students.
		2-3-2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biological and pharmaceutical materials/products
		2-3-3	Handle and dispose of biological samples safely to avoid harm to individuals and the environment according to safety guidelines.
Domain 3: Pharmaceutical Care 3-1-COPETENCY		<p>Upon finishing this course, students will be able to apply the principles of biochemistry in understanding normal body functions to improve healthcare services using evidence-based information.</p>	

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		This competency will be developed via the following key elements:	
3-1-1	Relate the normal and abnormal body functions based on biochemistry to manage different disorders and diseases to improve health care services.	3-1-1	Explain the biochemical basis of normal cellular and systemic functions and their regulatory mechanisms.
		3.1.2	Correlate biochemical abnormalities with the development and progression of common diseases and disorders.
		3.1.3	Apply biochemical knowledge to interpret clinical data for diagnosis, prognosis, and management to improve health care services.
Domain 4: Personal Practice 4-2- Competency		Upon finishing this course, students will be able to Effectively communicate verbally, non-verbally and in writing with individuals and communities. This competency will be developed via the following key elements:	
4-2-2	Use contemporary technologies and media to demonstrate effective presentation skills	4.2.1	Utilize digital tools and contemporary technologies to design clear, engaging, and professional presentations.
		4.2.2	Apply critical thinking and creativity in delivering scientific and professional content.
Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-2- COMPETENCY		Upon finishing this course, Learn key metabolic and biosynthetic pathways, and how the pathways are regulated and connected, Learn about methods used for studying biochemical pathways, Improve problem-solving and independent thinking ability, Improve the ability to communicate through written and oral communication This competency will be developed via the following key elements:	

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Identify the principle role of biochemistry in understanding normal body functions.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-3- COMPETENCY		Upon finishing this course, students will be able to handle and dispose biological material and chemicals effectively and safely with respect to relevant laws and legislations. This competency will be developed via the following key elements:	
2-3-1	Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical fields.	2-3-1	Safely handle different chemicals to avoid their harm to the students.
2-3-2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products	2-3-2	Handle, and dispose biological samples and chemicals safely to avoid their harm to individuals and environment according to safety guidelines.
Domain 3: Pharmaceutical Care 3-1-COPETENCY		Upon finishing this course, students will be able to apply the principles of biochemistry in understanding normal body functions to improve health care services using evidence-based information. This competency will be developed via the following key elements:	

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
3-1-1	Relate the normal and abnormal body functions based on biochemistry to manage different disorders and diseases to improve health care services.	3-1-1	Relate the normal and abnormal body functions based on biochemistry to manage different disorders and diseases to improve health care services.
Domain 4: Personal Practice 4-2- Competency		Upon finishing this course, students will be able to Effectively communicate verbally, non-verbally and in writing with individuals and communities. This competency will be developed via the following key elements:	
4-2-2	Use contemporary technologies and media to demonstrate effective presentation skills	4.2.1	Perform presentation on the advanced topical drug delivery systems and their benefits.
		4.2.2	effective presentation skills in Acquire the modern technology and media to create engaging and memorable experiences. This includes using interactive slides, incorporating multimedia (videos, images, audio), and employing tools for real-time feedback and collaboration. By integrating these elements, student can enhance audience engagement, clarify complex information, and leave a lasting impact.

4. Teaching and Learning Methods

- 1- Lectures (✓)
- 2- E-learning (✓)
- 3- Practical training/ laboratory (✓)
- 4- Class activity (✓)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/.....)	Training (Practical /Clinical/.....)	Self-learning (Tasks/Assignments/Projects/...)	Other (to be determined)
1	Mobilization of body stores of glycogen and fats	4	2	2		
2	Metabolism and tissue utilization of glucose	4	2	2		
3	Metabolism and tissue utilization of amino acids	4	2	2		
4	Metabolism and tissue utilization of fatty acids	4	2	2		
5	Regulation of blood glucose clinical correlations level and	4	2	2		
6	Feed/fast cycle	4	2	2		
7	Mid-term exam					
8	Nitrogen metabolism and nitrogen balance	4	2	2		
9	Inborn errors of metabolism	4	2	2		
10	Inborn errors of metabolism (Cont.)	4	2	2		
11	Second messengers and signal transduction	4	2	2		
12	Biochemistry of cancer	4	2	2		
13	Biochemistry of aging	4	2	2		
14	Food biochemistry (milk – probiotics)	4	2	Practical exam		
15	Oxidative stress and body defence mechanisms	4	2	Practical exam		

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Exam 1 written (Semester work)	3	10	%10
2	Final Written Exam	17-16	50	%50
3	Final Practical/Clinical/... Exam	15-14	25	%25
4	Final Oral Exam	17-16	10	%10
5	Assignments / Project /Portfolio/ Logbook	9,6,3	5	%5

6. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course (must be written in full according to the scientific documentation method)	1- Abali, Emine Ercikan, et al. Lippincott® illustrated reviews: biochemistry. Lippincott Williams & Wilkins, 2025. 2- Harper's illustrated Biochemistry by Murray RK, Bender DA, Botham KM, Kennelly PJ, Rodwell VW, P. Anthony Weil PA (2018), 31th Edition, McGraw Hill. 3- Essential Biochemistry: Pratt CW and Cornely K (2017), 4 th edition John Wiley & Sons Inc., USA.
	Other References	1- Notes in Biochemistry II by staff-members of department of Biochemistry. 2- Lab Notes in Biocemistry II by staffmembers of department of Biochemistry
	Electronic Sources (Links must be added)	http://www.freescience.info/Biology.php . www.highwire.com , www.google.com , www.ncbi.nlm.nih.gov & www.biomed.net http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookTOC.html
	Learning Platforms (Links must be added)	https://lms3.kfs.edu.eg/pharm/login/index.php
	Other (to be mentioned)	--
	Devices/Instruments	SPECTROPHOTOMETER
Supportive facilities & equipment for teaching and learning *	Supplies	Class rooms. - Library - Data show - Computers. - Internet. - Smart board

	Electronic Programs	---
	Skill Labs/ Simulators	---
	Virtual Labs	praxi lab
	Other (to be mentioned)	√√√

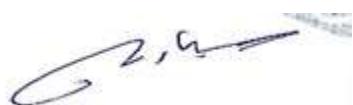
Course Plan

Week	Topic	Key Elements	Teaching & Learning Methods	Student Assessment Methods
1	Mobilization of body stores of glycogen and fats	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3, 4.2.1, 4.2.2	Lectures, and E-learning	Written and oral exams
2	Metabolism and tissue utilization of glucose	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3, 4.2.1, 4.2.2	Lectures, E-learning and practical training	Written, practical and oral exams
3	Metabolism and tissue utilization of amino acids	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3, 4.2.1, 4.2.2	Lectures, E-learning and practical training	Written, practical and oral exams
4	Metabolism and tissue utilization of fatty acids	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3, 4.2.1, 4.2.2	Lectures, and E-learning	Written, and oral exams

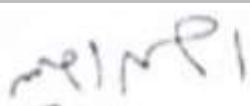
5	Regulation of blood glucose level and clinical correlations	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3, 4.2.1, 4.2.2	Lectures, and E-learning	Written, and oral exams	
6	Feed/fast cycle	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3, 4.2.1, 4.2.2	Lectures, and E-learning	Written, and oral exams	
7	Mid-term exam				
8	Nitrogen metabolism and nitrogen balance	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3, 4.2.1, 4.2.2	Lectures, E-learning and practical training	Written, practical and oral exams	
9	Inborn errors of metabolism	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3, 4.2.1, 4.2.2	Lectures, and E-learning	Written, and oral exams	
10	Inborn errors of metabolism (Cont.)	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3, 4.2.1, 4.2.2	Lectures, and E-learning	Written, and oral exams	
11	Second messengers and signal transduction	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1,	Lectures, and E-learning	Written, and oral exams	

		3.1.2, 3.1.3,4.2.1, 4.2.2		
12	Biochemistry of cancer	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3,4.2.1, 4.2.2	Lectures, and E-learning	Written, and oral exams
13	Biochemistry of aging	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3,4.2.1, 4.2.2	Lectures, and E-learning	Written, and oral exams
14	Food biochemistry (milk – probiotics)	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3,4.2.1, 4.2.2	Lectures, and E-learning	Written, and oral exams
15	Oxidative stress and body defence mechanisms	1.1.1, 1.1.2, 1.1.3, 1.1.4, 2.3.1, 2.3.2, 2.3.3, 3.1.1, 3.1.2, 3.1.3,4.2.1, 4.2.2	Lectures, and E-learning	Written, and oral exams

Name and Signature
Course Coordinator
Dr. Shaimaa Ali



Name and Signature
Program Coordinator
Dr. Ahmed Amin





Course Specification (2025)

1. Basic Information

Course Title (according to the bylaw)	Physiology II			
Course Code (according to the bylaw)	MD405			
Department/s participating in delivery of the course	Biochemistry department (Physiology department, faculty of medicine)			
Number of credit hours/points of the course (according to the bylaw)	Theoretica 1	Practical	Other (specify)	Total
	2	0		2
Course Type	Compulsory			
Academic level at which the course is taught	Level (2), semester 4			
Academic Program	BSc in Pharmacy (Pharm D-clinical)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh university			
Name of Course Coordinator	Dr. Sanad Elkholy			
Course Specification Approval Date	9-2025			

Course Specification Approval (Attach the decision/minutes of the department /committee/council)	Department council
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2. Course Overview (Brief summary of scientific content)

Upon successful completion of this course, the students should be able to:

Study the normal physiological aspects of cardiovascular system, central nervous system and endocrine system. Study the abnormal pathophysiological conditions affecting cardiovascular system, central nervous system and endocrine system. Practically identify some of physiological parameters such as BP, HR,...etc.

3. Course Learning Outcomes CLOs

Matrix of course learning outcomes CLOs with program outcomes POs (NARS/ARS)

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		Upon finishing this course, students will be able to integrate knowledge from basic physiological knowledge to identify the abnormality in body function via the following key elements This competency will be developed via the following key elements:	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Articulate knowledge The normal physiological aspects
Domain 3: Pharmaceutical Care 3-1-COPETENCY		Upon finishing this course, students will be able to apply the principles of body functions This competency will be developed via the following key elements:	
		3-1-1	relate the difference between physiology of the body systems studied.
Domain 4: Personal Practice 4-2- Competency		Upon finishing this course, students will be able to effectively communicate verbally, non-verbally and in	

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	Text	Code	Text
		writing with individuals and communities this competency will be developed via the following key elements:	
		4.2.2	Use contemporary technologies and media to demonstrate effective presentation skills

4. Teaching and Learning Methods

- 1- Lectures (✓)
- 2- E-learning (✓)
- 3- Class activity (✓)

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/.....)	Training (Practical /Clinical/.....)	Self-learning (Tasks/Assignments/Projects/...)	Other (to be determined)
1	Introduction to Human Physiology and Homeostasis	2	2	0		
2	Cardiovascular System: Structure and Function	2	2	0		
3	Cardiovascular Pathophysiology	2	2	0		
4	Cardiovascular Physiology Measurements	2	2	0		

5	Cardiovascular System, clinical correlations and case discussions	2	2	0		
6	Central Nervous System: Structure and Function	2	2	0		
7	Mid-term exam	2		0		
8	Central Nervous System Pathophysiology	2	2	0		
9	Nervous System Physiology	2	2	0		
10	Nervous System, clinical correlations and case discussions	2	2	0		
11	Endocrine System: Structure and Function	2	2	0		
12	Endocrine Pathophysiology	2	2	0		
13	Endocrine Physiology and Biochemical Parameters	2	2	0		
14	Integration of Systems: Neuroendocrine and Cardiovascular Interactions	2	2	0		
15	Endocrine System, clinical correlations and case discussions	2	2	0		

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Exam 1 written (Semester work)	7	10	%10
2	Final Written Exam	17-16	75	%75
3	Final Practical/Clinical/... Exam			
4	Final Oral Exam	17-16	10	%10
5	Assignments / Project /Portfolio/ Logbook	9,6,3	5	%5

6. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course (must be written in full according to the scientific documentation method)	Textbook in Medical Physiology and Pathophysiology(2005). Poul-Erik Paulev. 2 nd edition . Copenhagen Medical Publishers
	Other References	
	Electronic Sources (Links must be added)	http://physiologyonline.physiology.org/ http://arjournals.annualreviews.org/loi/physiol
	Learning Platforms (Links must be added)	https://lms3.kfs.edu.eg/pharm/login/index.php
	Other (to be mentioned)	--
Supportive facilities & equipment for teaching and learning *	Devices/Instruments	
	Supplies	Class rooms. - Library - Data show - Computers. - Internet. - Smart board
	Electronic Programs	---
	Skill Labs/ Simulators	---
	Virtual Labs	
	Other (to be mentioned)	

Course Plan

Course Contents	ILOs	Teaching and Learning Methods	Student Assessment Methods	
Week # 1	Introduction to Human Physiology and Homeostasis	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams
Week # 2	Cardiovascular System: Structure and Function	1.1.1, 3.1.1, 4.2.2.	Lectures	Written, and oral exams

Week # 3	Cardiovascular Pathophysiology	1.1.1, 3.1.1, 4.2.2.	Lectures	Written, and oral exams
Week # 4	Cardiovascular Physiology Measurements	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams
Week # 5	Cardiovascular System, clinical correlations and case discussions	1.1.1, 3.1.1, 4.2.2.	Lectures	Written, and oral exams
Week # 6	Central Nervous System: Structure and Function	1.1.1, 3.1.1, 4.2.2.	Lectures	Written, and oral exams
Week # 7	Mid-term exam			
Week # 8	Central Nervous System Pathophysiology	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams
Week # 9	Nervous System Physiology	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams
Week # 10	Nervous System, clinical correlations and case discussions	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams
Week # 11	Endocrine System: Structure and Function	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams
Week # 12	Endocrine Pathophysiology	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams
Week # 13	Endocrine Physiology and Biochemical Parameters	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams
Week # 14	Integration of Systems: Neuroendocrine and Cardiovascular Interactions	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams
Week # 15	Endocrine System, clinical correlations and case discussions	1.1.1, 3.1.1, 4.2.2.	Lectures	Written and oral exams

Name and Signature

Name and Signature

Course Coordinator

Dr. Sanad Elkholy

Program Coordinator

ساند الخولي

د. عبد العزيز المنشاوي
