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

Clinical (Pharm-D) program

Course Specification

2025/2026

Fifth Level

First Semester

Table of Contents:

Note: page numbering according to the order of appearance in the merged pdf file.

Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	basic and clinical toxicology			
Course Code (according to the bylaw)	PO906			
Department/s participating in delivery of the course	Pharmacology & Toxicology department			
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	Fifth level, semester 1			
Academic Program	Bachelor of Pharmacy (Pharm D Clinical)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Prof. Sherin Zakaria			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	Department of Pharmacology & Toxicology Council			

2. Course Overview (Brief summary of scientific content)

This course defines the general principles of basic toxicology taking into consideration mutagenesis, carcinogenesis and teratogenesis. It estimates the risk of different toxicities including, heavy metals, poisoning with common drugs, poisoning with common chemicals, radiation and radioactive material toxicity. It also demonstrates clinical toxicology of specific drug groups as well as specific organ toxicities. Moreover, it recognizes general management of toxicity with natural toxins, gases, animals and plant toxins, maternal, fetal and neonatal toxicity.

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	demonstrate the principles of basic and applied toxicology
1.1.4	Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate their appropriateness, effectiveness, and safety in individuals and populations	1.1.2	Demonstrate understanding of the clinical picture of different toxins as well as the used each toxin antidote in each toxin .
		1.1.3	select the toxicological tests that are commonly used for the evaluation of teratogenicity and mutagenicity
		1.1.4	Evaluate and manage various types of

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**
			poisonous agents.
1.1.6	Utilize scientific literature and collect and interpret information to enhance professional decision.	1.1.5	Retrieve and interpret scientific literature on the principles of toxicology, including mutagenesis, carcinogenesis, teratogenesis, and organ-specific toxicities, to support accurate risk assessment and clinical decision-making.
		1.1.6	Collect and analyze data on toxicities from heavy metals, drugs, chemicals, radiation, natural toxins, and maternal/fetal/neonatal exposures to guide evidence-based management strategies**.**
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	Apply the general principles of basic toxicology in a manner that upholds ethical standards, respects patients' rights, and values cultural and individual diversity when assessing and managing toxic exposures.
		2.1.2	Estimate and manage the risks of toxicities while ensuring culturally sensitive care and equitable treatment across diverse patient populations.
2.1.3	Recognize own personal and professional limitations and accept the conditions of referral to or guidance from other members of the health care team.	2.1.3	Recognize professional limits in toxicology and refer or seek guidance from appropriate specialists when managing complex or uncertain toxicity cases.
		2.1.4	Collaborate with the healthcare team in assessing and managing toxicities, ensuring safe and effective interdisciplinary patient

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**
			care.
2-4- COMPETENCY		**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.** **This competency will be developed via the following key elements:**	
2.4.1	Ensure safe handling/use of poisons to avoid their harm to individuals and communities.	**2.4.1**	Apply general principles of toxicology to ensure safe handling and use of poisons, considering mutagenesis, carcinogenesis, teratogenesis, and specific organ toxicities to prevent harm to individuals and communities
		2.4.2	Assess and control risks from heavy metals, drugs, chemicals, radiation, natural toxins, gases, and maternal/fetal/neonatal exposures to protect public health and community safety
2.4.2	Demonstrate understanding of the first aid measures needed to save patient's life.	**2.4.3**	Recognize life-threatening toxicities and apply the general principles of toxicology to guide immediate first aid measures for poisonings, including those caused by drugs, chemicals, radiation, and natural toxins.
		2.4.4	implement emergency management protocols for specific organ toxicities and maternal/fetal/neonatal exposures, ensuring timely interventions to save the patient's life.
2.4.3	Take actions to solve any identified medicine-related and pharmaceutical care problems.	**2.4.5**	Identify and resolve toxicity-related problems by applying general principles of toxicology, including mutagenesis, carcinogenesis, teratogenesis, and specific organ toxicities, to medicine-related adverse effects.

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**
		2.4.6	Develop and implement management plans for toxicities from heavy metals, drugs, chemicals, radiation, and natural toxins, ensuring safe and effective pharmaceutical care for all patient groups, including maternal, fetal, and neonatal cases.
2.4.4	Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens	**2.4.7**	Apply general toxicology principles to assess the toxicity profiles of xenobiotics, considering mutagenesis, carcinogenesis, teratogenesis, and specific organ toxicities.
		2.4.8	Detect and identify poisons in biological specimens related to heavy metals, drugs, chemicals, radiation, natural toxins, and maternal/fetal/neonatal exposures to support accurate diagnosis and management
2-5- COMPETENCY		**Upon finishing this course, students will be able to contribute in pharmaceutical research studies and clinical trials needed to authorize medicinal products.** **This competency will be developed via the following key**	
2.5.2	Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession	**2.5.1**	Retrieve and interpret scientific data on the general principles of toxicology, including mutagenesis, carcinogenesis, teratogenesis, and specific organ toxicities, to support evidence-based practice.
		2.5.2	Critically evaluate research and clinical evidence on the risks, diagnosis, and management of toxicities from heavy metals, drugs, chemicals, radiation, natural toxins, and maternal/fetal/neonatal exposures for informed decision-making in pharmacy practice.

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 **3-2- 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 medicines and medical devices.** **This competency will be developed via the following key**	
3.2.4	provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control	**3.2.1**	Describe toxic profiles of CN, CO, methanol, paracetamol, salicylate, heavy metals, organophosphorus, and corrosive **by** outlining their sources, mechanisms of toxicity, and potential effects
		3.2.2	Identify, recognize symptoms, and manage toxicities from heavy metals, drugs, chemicals, radiation, natural toxins, and maternal/fetal/neonatal exposures using appropriate control and treatment strategies.
3.2.6	Maintain public awareness on social health hazards of drug misuse and abuse.	**3.2.3**	Apply toxicology principles to explain the health risks and social hazards of drug misuse and abuse, including mutagenic, carcinogenic, teratogenic, and organ-specific effects.
		3.2.4	Promote public awareness and prevention strategies for toxicities related to drugs, chemicals, radiation, natural toxins, and maternal/fetal/neonatal exposures to reduce community health risks
Domain 4: Personal Practice **4-1- Competency**		**Upon finishing this course, students will be able to express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.** **This competency will be developed via the following key elements:**	
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express	**4.1.1**	Coordinate and oversee team tasks in applying general toxicology principles to assess and manage toxicities, ensuring timely

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**
	time management skills.		and accurate evaluation of cases involving mutagenesis, carcinogenesis, teratogenesis, and organ-specific effects.
		4.1.2	Contribute to peer evaluation and collaborative problem-solving in managing toxicities from heavy metals, drugs, chemicals, radiation, natural toxins, and maternal/fetal/neonatal exposures, while demonstrating effective time management in toxicology-related activities
4.1.2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	4.1.3	Analyze data critically and information from different sources.
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:**	
4.2.1	Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care team, patients, and communities.	4.2.1	Effectively communicate toxicology information verbally, non-verbally, and in writing to healthcare teams, patients, and communities.
4.2.2	Use contemporary technologies and media to demonip9-strate effective	4.2.2	Utilize contemporary technologies and media

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**
	presentation skills.		to present information on the principles, risks, symptoms, and management of toxicities from drugs, chemicals, radiation, natural toxins, and maternal/fetal/neonatal exposures in an effective and engaging manner.
4-3- Competency		**Upon finishing this course, students will be able to Express self-awareness and be a life-long learner for continuous professional improvement.** **This competency will be developed via the following key elements:**	
4.3.1	Perform self-assessment to enhance professional and personal competencies.	**4.3.1**	Self-assess knowledge and skills in toxicology to improve competence in risk assessment, diagnosis, and management of diverse toxicities.
4.3.2	Practice independent learning needed for continuous professional development.	**4.3.2**	Engage in independent learning to update and expand knowledge on principles of basic and clinical toxicology, including risk assessment and management of toxicities from chemicals, drugs, radiation, natural toxins, and specific organ systems.

4. Teaching and Learning Methods

1. 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	General Principles of Toxicology (acute and chronic toxicity)	**4**	**2**	**2**		
2	Teratogenesis	**4**	**2**	**2**		
3	Teratogenesis	**4**	**2**	**2**		
4	Target organ toxicity (Hepatotoxicity & Nephrotoxicity)	**4**	**2**	**2**		
5	Target organ toxicity (Nervous system toxicity, Pulmonary toxicity)	**4**	**2**	**2**		
6	Alcohol toxicity	**4**	**2**	**2**		
7	**Semester work**					
8	Toxicology of Pesticide	**4**	**2**	**2**		
9	Toxicity of thallium	**4**	**2**	**2**		
10	Heavy metals	**4**	**2**	**2**		
11	Heavy metals	**4**	**2**	**2**		
12	Cyanide toxicity	**4**	**2**	**2**		

13	Corrosives toxicity	**4**	**2**	**Revision**		
14	Carbon monoxide toxicity	**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 1written (formative exam)	4th week	5	5
2	Periodical exam	7th week	10	10
3	Final Practical/Clinical/… Exam	14th ,15th	25	25
4	Final Written Exam	16th ,17th	50	50
5	Final Oral Exam	16th ,17th	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)	-Casarett & Doull's Essentials of Toxicology, Third Edition (Lange), 3rd edition, 2015. - The Pharmacological Basis of Therapeutics (2008). Goodman & Gilman's. 12 th edition. The McGraw-Hill Companies
	Other References	Notes and Lab manual prepared by the department staff.
	Electronic Sources (Links must be added)	www.pubmed.com Google scholar: https://scholar.google.com.eg/ www.sciencedirect.com
	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**	-Data show -Computers . - Board - Internet
	Supplies	notebooks.
	Electronic Programs	**----**
	Skill Labs/ Simulators	**----**
	Virtual Labs	**----**
	Other (to be mentioned)	Class rooms. Library.

Course Plan

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

Course title: basic and clinical toxicology Course code: PO906

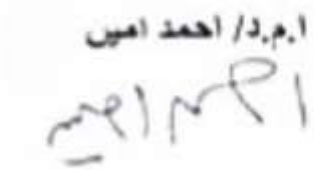
Week #	Course Contents	Key Elements	Teaching and Learning Methods	Student Assessment Methods
1	General Principles of Toxicology (acute and chronic toxicity)	1.1.1, 2.1.1, 2.1.3, 2.4.1, 2.4.3, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures and practical training	Written, practical and oral exams
2	Teratogenesis	1.1.1, 1.1.3, 1.1.5,1.1.6,2.1.1, 2.1.3, 2.1.4, 2.4.1, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures and practical training, discussion	Written, practical and oral exams
3	Mutagenesis	1.1.1, 1.1.3, 1.1.5,1.1.6,2.1.1, 2.1.3, 2.1.4, 2.4.1, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures and practical training	Written, practical and oral exams
4	Target organ toxicity (Hepatotoxicity & Nephrotoxicity)	1.1.1, 1.1.5,1.1.6, 2.1.1, 2.1.2, 2.1.3, 2.4.1, 2.4.4, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures and practical training, discussion	Written, practical and oral exams
5	Target organ toxicity (Nervous system &	1.1.1, 2.1.1, 2.1.2, 2.1.3,	Lectures and practical	Written, practical

	Pulmonary toxicity)	2.4.1, 2.4.4, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	training	and oral exams
6	Alcohol toxicity	1.1.11.1.5,1.1.6, 2.1.1, 2.1.2, 2.1.3, 2.4.1, 2.4.3, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures, practical training, e-learning, discussion	Written, practical and oral exams
7	Semester work	—	—	—
8	Toxicology of Pesticides	1.1.1, 1.1.2, 2.1.1, 2.1.3, 2.4.1, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures, practical training, e-learning, case study	Written, practical and oral exams
9	Toxicity of Thallium	1.1.1, 1.1.2, 2.1.1, 2.1.3, 2.4.1, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures, practical training, brainstorming	Written, practical and oral exams
10	Heavy metals	1.1.1, 1.1.2, 2.1.3, 2.4.1, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures, practical training, case study, brainstorming	Written, practical and oral exams
11	Heavy metals	1.1.1, 1.1.2, 2.1.3, 2.4.1, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures, practical training, case study, brainstorming	Written, practical and oral exams
12	Cyanide toxicity	1.1.1, 1.1.2, 2.1.1, 2.1.3, 2.1.4, 2.4.1, 2.4.3, 2.4.5,	Lectures, practical training, case study	Written, practical and oral exams

		3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3		
13	Corrosives toxicity	1.1.1, 2.1.3, 2.4.1, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures, practical training, case study	Written, practical and oral exams
14	Carbon monoxide toxicity	1.1.1, 1.1.2, 2.1.3, 2.4.1, 2.4.5, 3.2.1, 3.2.2, 4.1.1, 4.1.2, 4.1.3	Lectures, brainstorming, case study	Written and oral exams

Name and Signature
Course Coordinator
Prof. Sherin Zakaria

Name and Signature
Program Coordinator
Ass. Prof.Ahmed Amin



Course Specification

(2025)

Course Title (according to the bylaw)	**Management of Neuropsychiatric Diseases**			
Course Code (according to the bylaw)	**PP 907**			
Department/s participating in delivery of the course	**Clinical Pharmacy Department**			
Number of credit hours/points of the course (according to the bylaw)	**Theoretical**	**Practical**	**Other (specify)**	**Total**
	2	**2**	**----**	**3**
Course Type	**Compulsory**			
Academic level at which the course is taught	**Fifth level, first semester**			
Academic Program	**Bachelor of Pharmacy (Pharm D.) (Clinical pharmacy)**			
Faculty/Institute	**Faculty of Pharmacy**			
University/Academy	**Kafrelsheikh University**			
Name of Course Coordinator	**Associate. Prof. Ahmed Amin Ali**			
Course Specification Approval Date	**31/8/2025**			
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	**Department council**			

2. Course Overview (Brief summary of scientific content)

This course aims to provide the student with the knowledge in pathophysiology, clinical interpretation, pharmacotherapy and management of neuropsychiatric disorders including **major depressive disorder, schizophrenia, bipolar disorders, generalized anxiety disorders, insomnia, epilepsy, and Parkinson's disease** as well as neuropsychiatric symptoms including cognitive impairment, movement disorders, mood disturbances, and sleep disorders.

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 recognize neuropsychiatric disorders including symptoms, signs, pathophysiology, risk factors and lab investigations that help them to diagnosis patients and identify the non-pharmacological and pharmacological treatment for each neuropsychiatric disorder.** **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**	Understand neuroanatomy and neurophysiology to explain disease development in depression, schizophrenia, and bipolar disorder.
		1.1.2	Recognize psychosocial factors contributing to major depressive disorder and generalized anxiety disorders.
		1.1.3	Integrate clinical knowledge in selecting appropriate treatment for epilepsy, Parkinson's disease, or bipolar disorder.
		1.1.4	Understand the administrative and public health aspects of managing mental health outbreaks and community programs.

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.	**1.1.5**	Explain the mechanism of SSRIs, antipsychotics, mood stabilizers, benzodiazepines, anticonvulsants, dopaminergic agents…etc.
		1.1.6	Evaluate drug safety in hepatic/renal impairment and elderly patients with neuropsychiatric conditions
		1.1.7	Justify selection of antipsychotics in schizophrenia based on symptoms and side effect profile.
		1.1.8	Justify selection of antiepileptic drugs based on seizure type and patient characteristics.
1.1.5	Retrieve information from fundamental sciences to solve therapeutic problems	**1.1.9**	Use clinical guidelines (e.g., APA, NICE, WHO) to guide treatment of neuropsychiatric disorders.
		1.1.10	Solve drug selection issues in complex cases like treatment-resistant depression or refractory epilepsy.
1.1.6	Utilize scientific literature and collect and interpret information to enhance professional decisions.	**1.1.11**	Review recent trials for new antidepressants, antipsychotics, or anticonvulsants.
		1.1.12	Identify lab values and neuroimaging findings to support clinical decisions in neuropsychiatric disorders.
		1.1.13	Identify studies comparing different regimens in bipolar disorder maintenance or Parkinson's treatment.
1.1.7	Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.	**1.1.14**	Discuss the impact of digital therapeutics and telemedicine on neuropsychiatric treatment outcomes.
		1.1.15	Explore precision medicine and pharmacogenomics in psychiatry as emerging trends.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-1- COMPETENCY		**Through studying Neuropsychiatry, students develop the ability to work effectively within an inter-professional healthcare team to provide patient-centered care. They collaborate with psychiatrists, neurologists, psychologists, and other professionals to**	

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**
		manage conditions such as depression, schizophrenia, bipolar disorder, epilepsy, and Parkinson's disease. 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**	Students learn how to deal with patients with mental health conditions in an ethical and respectful way .
		2.1.2	They respect the patient's right to choose their treatment, maintain confidentiality, and provide culturally sensitive care in chronic cases like schizophrenia, bipolar disorder, or epilepsy.
2.1.3	Recognize your own personal and professional limitations and accept the conditions of referral to or guidance from other members of the health care team.	**2.1.3**	Identify when referral to a psychiatrist or neurologist is needed (e.g., for ECT, complex seizure disorders, movement disorders).
		2.1.4	Acknowledge limits in managing severe psychosis, suicidal ideation, or refractory epilepsy cases.
2-2- COMPETENCY		**In the Neuropsychiatry course, students gain the ability to apply scientific principles to ensure the quality and effectiveness of medications used in neuropsychiatric conditions.** **• How to participate in safe and accurate dispensing systems, especially for chronic treatments requiring long-term adherence.** **This competency will be developed via the following key elements:**	
2.2.4	Adopt the principles of pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and biopharmaceutics and their	**2.2.1**	Calculate dose modifications for CNS drugs in elderly patients and those with hepatic/renal impairment.

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**
	applications in new drug delivery systems, dose modification, bioequivalence studies, and pharmacy practice	**2.2.2**	Apply pharmacokinetic knowledge to manage therapeutic drug monitoring in epilepsy and bipolar disorder.
		2.2.3	Understand the impact of blood-brain barrier on drug distribution and CNS drug effectiveness.
2-4- COMPETENCY		**In Neuropsychiatry, students learn how to take professional and quick action in emergency situations that may affect the nervous system or be life-threatening**	
2.4.3	Take actions to solve any identified medicine-related and pharmaceutical care problems.	2.4.1	Detect and manage drug-induced movement disorders from antipsychotics.
		2.4.2	Manage ADRs related to mood stabilizers and anticonvulsants.
		2.4.3	Address non-adherence in chronic schizophrenia, bipolar disorder, or epilepsy cases.

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**
		2.4.4	Apply emergency protocols for status epilepticus, serotonin syndrome, or neuroleptic malignant syndrome.
2-5- COMPETENCY		**In Neuropsychiatry, students are introduced to how pharmaceutical research and clinical trials are essential for developing and approving new treatments for neuropsychiatric conditions**.	
2.5.2	Competency Contribute to pharmaceutical research studies and clinical trials needed to authorize medicinal products.	**2.5.1**	Students must be able to review evidence from Cochrane, NICE, or clinical psychiatry databases for neuropsychiatric treatment.
		2.5.2	Participate in reviewing and discussing case studies or clinical trial examples relevant to neuropsychiatric disorders.
Domain 3: Pharmaceutical Care **3-1- Competency**		Students must know how nervous systems work in health and disease. Understand how genetics can affect neuropsychiatric diseases and treatment. Link between disease causes, symptoms, tests, and treatment in depression, schizophrenia, epilepsy, etc.	
3.1.1	Apply the principles of body function and the basis of genomics in health and disease states to manage different diseases.	**3.1.1**	Explain the pathophysiology of major depressive disorder and its neurobiological basis.
		3.1.2	Relate genetic predisposition in schizophrenia and pharmacogenomics in antidepressant response.
3.1.4	Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of	**3.1.3**	Describe the full clinical picture of neuropsychiatric diseases like bipolar disorder, epilepsy, Parkinson's disease.

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**
	infections/diseases and their pharmacotherapeutic approaches.	**3.1.4**	Correlate lab findings (drug levels, liver function) and neuroimaging with therapeutic options in epilepsy or movement disorders.
3-2- Competency		Students are trained to educate patients and communities about how to use neuropsychiatric medications safely and effectively.	
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**	Match drug MOA to symptom control in neuropsychiatric diseases (e.g., antipsychotics for positive symptoms in schizophrenia).
		3.2.2	Explain ADRs of antipsychotics, mood stabilizers, and anticonvulsants.
3.2.2	Apply the principles of clinical pharmacology and pharmacovigilance for the rational use of medicines and medical devices.	**3.2.3**	Report and manage ADRs from neuropsychiatric medications.
		3.2.4	Monitor drug interactions in polypharmacy for elderly patients with multiple neuropsychiatric conditions.
3.2.3	Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.	**3.2.5**	Counsel on safe use of herbal remedies like St. John's wort in depression or melatonin in insomnia.
3.2.4	Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.	**3.2.6**	Identify signs of drug toxicity (e.g., SSRI)
		3.2.7	Provide management steps for drug overuse/misuse.
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.	**3.2.8**	Counsel patients on proper use of antidepressants, antipsychotics, mood stabilizers, and sleep medications.
		3.2.9	Educate on lifestyle modifications and medication adherence in bipolar disorder, epilepsy, and Parkinson's disease.

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**
3.2.6	Maintain public awareness on social health hazards of drug misuse and abuse.	**3.2.10**	Warn against misuse of medications such as benzodiazepine in patients with insomnia
		3.2.11	warn against misuse of the herbal product may be used for treatment of neuropsychiatric diseases.
Domain 4: Personal Practice **4-1- Competency**		**From this competency, the student should learn how to work well with others when preparing and presenting topics related to neuropsychiatric diseases, manage time effectively, take responsibility and show leadership, think clearly and solve problems**. • Be creative in making the presentation easy to understand and interesting. • Work independently but also support the team when needed. This competency will be developed via the following key elements:	
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.	**4.1.1**	Take responsibility for their role in preparing neuropsychiatric case discussions or treatment plan presentations.
		4.1.2	Give constructive feedback to peers on explaining antipsychotic mechanisms or patient counseling for epilepsy.
		4.1.3	Mange time effectively by organizing tasks like researching drug therapies for bipolar disorder and preparing presentations.
4.1.2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	**4.1.4**	Retrieve and critically analyze evidence for treating treatment-resistant depression or managing Parkinson's disease.
		4.1.5	Solve problems such as explaining complex neuropsychiatric pharmacotherapy or

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**
			adjusting treatment in patients with comorbidities.
		4.1.6	collaborate and contribute meaningfully to team discussions about neuropsychiatric treatment strategies.
4-2- Competency		**Upon finishing this course, students will be able to effectively communicate verbally, non-verbally and in writing about neuropsychiatric conditions with individuals and communities**. This competency will be developed via the following key elements:	
4.2.1	Show the ability to effectively present a topic of interest using recent technology.	**4.2.1**	Present neuropsychiatric case studies and write care plans clearly and concisely
		4.2.2	learn how to present topics like "Management of Schizophrenia" using modern tools like PowerPoint, infographics, and digital charts
4.2.2	Communicate clearly by verbal and written means with patients and members of healthcare society	**4.2.3**	Develop the ability to explain neuropsychiatric conditions and treatments both verbally and in writing.
		4.2.4	Communicate effectively with patients and healthcare team members about sensitive mental health topics with cultural competence.
4-3- Competency		**The students should learn how to reflect on their own performance when working on neuropsychiatric-related tasks and identify their strengths and weaknesses** 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**
4.3.1	Perform self-assessment to enhance professional and personal competencies.	**4.3.1**	Reflect on knowledge gaps in managing neuropsychiatric diseases and plan improvement.
		4.3.2	complete self-assessment tasks post-lecture on topics like mood disorders or epilepsy management
4.3.2	Practice independent learning is needed for continuous professional development	**4.3.3**	Follow latest guidelines and journals on depression, schizophrenia, and neurological disorders.
		4.3.4	Use independent learning to stay updated on drug safety and new neuropsychiatric therapies

4. Teaching and Learning Methods

Lectures **(√)**

1- E-learning **(√)**

2- Practical training/ laboratory (√)

3- Discussion **(√)**

4- Brainstorming **(√)**

5- Class activity **(√)**

6- 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	Depression	4	2	2		
2	Major depressive disorders	4	2	2		
3	Bipolar disorder	4	2	2		
4	Schizophrenia	4	2	2		
5	Schizophrenia	4	2	2		
6	Anxiety	4	2	2		
7	**Periodical exam**					
8	Generalized anxiety disorder	4	2	2		
9	Insomnia	4	2	2		
10	Epilepsy	4	2	2		

11	Epilepsy	**4**	**2**	**2**		
12	Parkinson's disease	**4**	**2**	**2**		
13	Parkinson's disease	**4**	**2**	**2**		
14	Alzheimer disease	**4**	**2**	**Practical exam**		
15	Attention Deficit/Hyperactivity Disorder	**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	**Week 7**	**15 marks**	**15%**
3	Final Written Exam	**Week 16,17**	**50 marks**	**50%**
4	Final Practical/Clinical/… Exam	**Week 14,15**	**15 marks**	**15%**
5	Final Oral Exam	**Week 16,17**	**10 marks**	**10%**
6	Assignments / Rubric/ Logbook	**All semester long**	**10 marks**	**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)	• Pharmacotherapy: A Pathophysiologic Approach, DiPiro JT, 12th Edition, McGraw-Hill • Applied Therapeutics: The Clinical Use of Drugs, 12th Edition, 2024. • Pharmacotherapy: Principles & Practice, 7th Edition, latest release. • Clinical Pharmacy and Therapeutics, 7th Edition, 2025.

	Other References	Theoretical Notes and Lab manual prepared by the department staff.
	Electronic Sources (Links must be added)	http://www.pubmed.com http://www.sciencedirect.com/ http://www.FDA.gov
	Learning Platforms (Links must be added)	https://lms3.kfs.edu.eg/pharm/login/index.php
	Other (to be mentioned)	**Pharmacotherapy handbook, 12th (2023)**
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	**-Data show.** **- Computers.** **–Library.** **–Internet.** **-Interactive boards and distant learning unit**
	Supplies	Classrooms. -Educational pharmacy
	Electronic Programs	**https://www.mdcalc.com**
	Skill Labs/ Simulators	**Educational pharmacy**

Course Plan

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

Course title: Management of Neuropsychiatric Diseases. Course code: PP 907

Course Contents		**Key elements**	**Teaching and Learning Methods**	**Student Assessment Methods**
Week # 1	Depression	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2,	Lectures, E-learning	Written, practical and oral exams

		3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 2	Major depressive disorders	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 3	Bipolar disorder	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 4	Schizophrenia	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3,	Lectures, E-learning, practical training and class activities	Written, practical and oral exams

		2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 5	**Schizophrenia**	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 6	**Anxiety**	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 7	**Periodical exam**			

Week # 8	Generalized anxiety disorder	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 9	Insomnia	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 10	**Epilepsy**	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3,	Lectures, E-learning, practical training and class activities	Written, practical and oral exams

		4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 11	Epilepsy	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training, seminars and class activities	Written, practical and oral exams
Week # 12	Parkinson's disease	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, seminars and practical training	Written, practical and oral exams
Week # 13	Parkinson's disease	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2,	Lectures, E-learning, seminars and practical training	Written, practical and oral exams

		3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 14	Alzheimer disease	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, seminars and practical training	Written, practical and oral exams
Week # 15	Attention Deficit/Hyperactivity Disorder	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13 ,1.1.14, 1.1.15, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.2.1, 2.2.2, 2.2.3, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1, 2.5.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, seminars and practical training	Written, practical and oral exams

Name and Signature Course Coordinator Associate. Prof. Noha Mahmoud El-Khodary	Name and Signature Program Coordinator Associate. Prof. Ahmed Amin Ali

Kafrelsheikh University

Faculty of Pharmacy

جامعة كفر الشيخ

كلية الصيدلة

Course Specification

2025

1. Basic Information

Course Title (according to the bylaw)	**Biotechnology**			
Course Code (according to the bylaw)	**PM 907**			
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**	**Practical**	**Other (specify)**	**Total**
	2	**1**	**----**	**3**
Course Type	**Compulsory course**			
Academic level at which the course is taught	**Fifth level, semester (1)**			
Academic Program	**BSc in Pharmacy (Pharm D clinical)**			
Faculty/Institute	**Faculty of Pharmacy**			
University	**Kafrelsheikh University**			
Name of Course Coordinator	**Prof. Dr. Mysara Mohammed**			
Course Specification Approval Date	**9/2025**			
Course Specification Approval	**Department council**			

2. Course Overview (Brief summary of scientific content)

The biotechnology subject is crucial for pharmacy students. It mainly aims to provide sufficient foundation for the student on how to learn the concept of the biotechnology, its main components, optimization of fermentation, bioconversion biodegradation and bioremediation – gene therapy and genetic engineering. It simply puts the student on the track of the hot topic and the coming near future of the pharmaceutical industries.

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 and applied pharmaceutical and biotechnological sciences to standardize biological materials, develop biopharmaceutical products, apply recombinant DNA technologies, and support patient-centered and population-based therapeutic strategies.** **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 the structure and function of nucleic acids and proteins involved in genetic engineering
		1.1.2	Describe the physicochemical properties and formulation principles of biopharmaceutical products (e.g., proteins, peptides, monoclonal antibodies).
		1.1.3	Define the principles and steps of recombinant DNA technology and gene cloning.

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	Demonstrate the ability to apply basic molecular biology techniques in pharmaceutical biotechnology.
1.1.7	Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care	**1.1.5**	Identify new biotechnological tools used in drug development.
		1.1.6	Describe the potential therapeutic implications of novel biotechnologies in treating genetic and chronic diseases.
		1.1.7	Define the difference between biotech-based therapies and conventional treatments in terms of patient outcomes
		1.1.8	List the benefits and risks of using gene therapy and personalized medicine
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-2- COMPETENCY		**Upon finishing this course, students will be able to standardize biological materials, apply biotechnology-based methods in the development and production of biopharmaceuticals, and contribute to the systems responsible for the handling, storage, and distribution of biotechnology-derived medicinal products.** **This competency will be developed via the following key elements:**	
2.2.2	Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.	**2.2.1**	Follow safety and quality rules when working with biological and biotech materials.
		2.2.2	Apply good manufacturing and laboratory practices during biotech product development
		2.2.3	Demonstrate ethical issues in using genetic engineering, stem cells, or animal materials
		2.2.4	Report any mistakes or problems that may affect the quality or safety of biotech products.

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**
		2.2.5	Use proper methods for storing and transporting sensitive biotech products (like vaccines).
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.	**2.2.6**	Select suitable equipment and techniques for synthesis and analysis of biotech products
		2.2.7	Adhere to environmental and waste disposal regulations when using and maintaining instruments.
		2.2.8	Assess the quality of biotech 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.	**2.2.9**	Apply accurate pharmaceutical calculations in designing and adjusting biotechnology-based formulations
		2.2.10	Use biostatistical tools to analyze and interpret experimental data ethically and accurately
2-3- COMPETENCY		**Upon finishing this course, students will be able to handle and dispose biologicals and pharmaceutical materials/products 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,	**2.3.1**	Handle and process chemicals, biological products, experimental microorganisms, and specimens safely and effectively according to relevant laws and regulations.

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**
	biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical fields.	**2.3.2**	Dispose chemicals, biological and microbiological products/waste safely to avoid the environmental hazards.
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	**2.3.3**	Recognize and adopt safety guidelines for safe and appropriate handling, use, storage and disposal of biological , microbiological specimens and chemical materials
2-5- COMPETENCY		**Upon finishing this course, students will be able to contribute to microbiological research studies and clinical trials needed to authorize biotech products.** **This competency will be developed via the following key elements:**	
2.5.3	Contribute in planning and conducting research studies using appropriate methodologies.	**2.5.1**	Contribute to the design and execution of biotechnology research using appropriate experimental methods and analytical techniques.
Domain 4: Personal Practice **4-1- Competency**		Upon finishing this course, students will be able to express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills. This competency will be developed via the following key elements:	
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.	**4.1.1**	Demonstrate responsibility in collaborative biotechnology projects, contribute to peer evaluation, and apply effective time management 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**
4.1.2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	**4.1.2**	Retrieve and critically evaluate biotechnology-related information, identify and solve scientific problems, and work both independently and collaboratively within a team.
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**	Deliver presentations on advanced biotechnological drug delivery systems and their therapeutic benefits.
		4.2.2	Utilize effective presentation skills in the modern technology and media to create memorable experiences through 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.
4-3- Competency		Upon finishing this course, students will be able to express self-awareness and be lifelong learners for continuous professional improvement. This competency will be developed via the following key elements:	
4.3.1	Perform self-assessment to enhance professional and personal competencies.	**4.3.1**	Collect and analyze information from different sources to determine limitation and improve personal and professional skills.

4. Teaching and Learning Methods

.1- **Lectures** (√)

2- **E-learning** (√)

3- **Practical training/ laboratory** (√)

4- **Virtual lab** (√)

5- **Assignment** (√)

6- **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	Introduction to biotechnology	**4**	**2**	**2**		
2	Genetic engineering	**4**	**2**	**2**		
3	Tissue culture	**4**	**2**	**2**		
4	Microbial growth and optimization conditions	**4**	**2**	**2**		
5	Antibiotics production	**4**	**2**	**2**		
6	Production of hormones	**4**	**2**	**2**		
7	**Periodical exam**					
8	Production of vaccines	**4**	**2**	**2**		
9	Production of enzymes	**4**	**2**	**2**		
10	Applications of Monoclonal antibodies in pharmaceutical market	**4**	**2**	**2**		
11	Applications of Monoclonal antibodies in Pharmaceutical market (continue)	**4**	**2**	**2**		
12	Gene therapy	**4**	**2**	**2**		
13	Gene therapy (continue)	**4**	**2**	**2**		
14	Quality control of biological products as vaccines, antibodies,…..	**4**	**2**	**Practical exam**		
15	Quality control of biological products as vaccines, antibodies, (continue)	**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 1written (formative exam)	**5**	**Training**	**---------**
2	Periodical exam	**7**	**15**	**15%**
3	Final Written Exam	**16, 17**	**50**	**50%**
4	Final Practical Exam	**14, 15**	**25**	**25%**
5	Final Oral Exam	**16, 17**	**10**	**10%**
6	Assignments / Portfolio/ Logbook	**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)	*Textbook of Genetics and Biotechnology.* (2023). American Academic Publishers. ISBN: 1666867527. An Introduction to Genetic Engineering (4th Edition). Watson, J. D., & Crick, F. H. C. (2023). *An Introduction to Genetic Engineering* (4th ed.). Cambridge University Press. Principles of Biotechnology and Genetic Engineering – by A. J. Nair.(2022)
	Other References	Notes and Lab manual prepared by the department staff.
	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
	Other (to be mentioned)	
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Laboratory facilities .
	Supplies	Laboratory facilities, microscope, laminar flow & autoclave
	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: Biotechnology Course code: PM 907

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Introduction to biotechnology	1.1.1,1.1.2	Lectures, E-learning, practical training	Written, practical and oral exams
Week # 2	Genetic engineering	1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.7, 2.2.6, 2.2.6, 2.3.1, 2.3.2, 2.5.1, 4.2.2, 4.3.1	Lectures, E-learning, practical training, virtual lab	Written, practical and oral exams
Week # 3	Tissue culture	1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.7, 2.2.3, 2.2.6, 2.2.6, 2.3.1, 2.3.2, 2.5.1, 4.2.2, 4.3.1	Lectures, E-learning, practical training	Written, practical and oral exams
Week # 4	Microbial growth and optimization conditions	2.2.1, 2.2.2, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.2.9, 2.3.1, 2.3.2, 2.3.3, 4.1.1, 4.2.2, 4.3.1	Lectures, E-learning, practical training	Written, practical and oral exams
Week # 5	Antibiotics production	1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.2.1, 2.2.2, 2.2.3, 2.2.5, 2.2.7 , 2.2.9 ,2.3.1, 2.3.2, 2.3.3, 4.1.1 , 4.3.1	Lectures, E-learning, practical training	Written, practical and oral exams
Week # 6	Production of hormones	1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.2.1, 2.2.2, 2.2.3, 2.2.5, 2.2.7 , 2.2.9 ,2.3.1, 2.3.2, 2.3.3, 4.1.1 , 4.3.1	Lectures, E-learning, practical training	Written, practical and oral exams
Week # 7	Periodical exam			
Week # 8	Production of vaccines	1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.2.1, 2.2.2, 2.2.3, 2.2.5, 2.2.7 , 2.2.9 ,2.3.1, 2.3.2, 2.3.3, 4.1.1 , 4.3.1	Lectures, E-learning, practical training	Written, practical and oral exams
Week # 9	Production of enzymes	1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.2.1, 2.2.2, 2.2.3, 2.2.5, 2.2.7 , 2.2.9 ,2.3.1, 2.3.2, 2.3.3, 4.1.1 , 4.3.1	Lectures, E-learning, practical training	Written, practical and oral exams

Week # 10	Applications of Monoclonal antibodies in pharmaceutical market	1.1.7,1.1.8, 2.2.1 ,2.2.2, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.3.1, 2.3.2, 2.3.3, 2.5.1, 4.1.2 , 4.2.1, 4.2.2., 4.3.1	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 11	Applications of Monoclonal antibodies in Pharmaceutical market (continue)	1.1.7,1.1.8, 2.2.1 ,2.2.2, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.3.1, 2.3.2, 2.3.3, 2.5.1, 4.1.2 , 4.2.1, 4.2.2., 4.3.1	Lectures, E-learning, practical training, seminars	Written, practical and oral exams
Week # 12	Gene therapy	1.1.7, 1.1.8, 2.2.1 ,2.2.2, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.3.1, 2.3.2, 2.3.3, 2.5.1, 4.1.2 , 4.2.1, 4.2.2., 4.3.1	Lectures, E-learning, seminars and practical training	Written, practical and oral exams
Week # 13	Gene therapy (continue)	1.1.7, 1.1.8, 2.2.1 ,2.2.2, 2.2.3, 2.2.5, 2.2.6, 2.2.7, 2.3.1, 2.3.2, 2.3.3, 2.5.1, 4.1.2 , 4.2.1, 4.2.2., 4.3.1	Lectures, assignment and E-learning	Written, practical and oral exams
Week # 14	Quality control of biological products as vaccines, antibodies,…..	2.2.4, 2.2.8, 2.2.10, 4.1.2 , 4.2.1, 4.2.2., 4.3.1	Lectures , assignment and E-learning	Written and oral exams
Week # 15	Quality control of biological products as vaccines, antibodies,…..(continue)	2.2.4, 2.2.8, 2.2.10, 4.1.2 , 4.2.1, 4.2.2., 4.3.1	Lectures and E-learning	Written and oral exams

Name and Signature
Course Coordinator
Prof. Dr. Mysara Mohammed

Name and Signature
Program Coordinator
Prof. Dr. Ahmed Amin

Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Phytotherapy			
Course Code (according to the bylaw)	PG 906			
Department/s participating in delivery of the course	Pharmacognosy			
Number of credit hours/points of the course (according to the bylaw)	Theoretical	Practical	Other (specify)	Total
	2	1		3
Course Type	compulsory			
Prerequisite	Phytochemistry II			
Academic level at which the course is taught	Level 5, semester (1)			
Academic Program	Bachelor of Pharmacy (Pharm D. clinical)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	ASS. Prof. Dr. Mai H. El-nagar			
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 aims to enable students to attain the systematic approach for herbal prescribing through a comparative study of both traditional and scientifically based uses of herbal drugs in the treatment of various clinical disorders. The course provides clinical pharmacy students with review of the available information on how botanicals may normalize an altered function. Approval by World Health Organization (WHO), German Federal Institute for Drugs and Medical Devices (Commission E) is the base for selection of the studied herbs. The herbal drugs treated in combined way relative to pharmacognosy, pharmacology and toxicology. Special concern is given to the possible mode of action of the herbal drugs based on experimental and clinical pharmacological studies. Also the student should understand the basis of complementary and alternative medicine with emphasis on herbal remedies, nutritional supplements, homeopathies, aromatherapy & their effect on maintaining optimum health and prevention of chronic diseases.

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 Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.	**Student will be able to integrate knowledge from basic and applied pharmaceutical sciences, including phytotherapy and aromatherapy, to standardize herbal and aromatic materials, formulate natural products, and deliver patient-centered care that incorporates evidence-based complementary therapies.**	
1.1.1	monstrate understanding of knowledge of rmaceutical, biomedical, social, behavioral, ninistrative, and clinical sciences.	**1.1.1**	Analyze principles of pharmacognosy, phytochemistry, and phytopharmacology in relation to herbal medicines, comparing their therapeutic rationale, regulation, and pharmacokinetic/pharmacodynamic profiles with synthetic drugs.
1.1.2	lize the proper pharmaceutical and medical ns, abbreviations and symbols in pharmacy ctice.	**1.1.2**	Apply correct phytotherapeutic terminology in professional communication, including botanical nomenclature, phytochemical constituents, standardized extract parameters, and mechanisms of action.
1.1.4	iculate knowledge from fundamental sciences explain drugs' actions and evaluate their ropriateness, effectiveness, and safety in ividuals and populations.	**1.1.3**	Perform analytical and preparative techniques for quality control of herbal materials and products using chromatographic and spectroscopic methods for extraction, isolation, and quantification of active or marker compounds.
1.1.5	Retrieve information from fundamental sciences to solve therapeutic problems.	**1.1.4**	Critically evaluate efficacy, safety, and mechanisms of herbal medicines for disorders of the central nervous, gastrointestinal, respiratory, metabolic, and urinary systems.
1.1.6	Utilize scientific literature and collect and interpret information to enhance professional decisions.	**1.1.5**	Integrate clinical, preclinical, and regulatory evidence to provide safe, effective phytopharmaceutical recommendations, including assessment of herb–drug interactions.

1.1.7	Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.	**1.1.6**	Examine current trends, innovations, and challenges in the phytopharmaceutical industry, including advances in standardization, biotechnology applications, regulatory policies, and their impact on patient care.
	DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE **2-1 competency 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.**	**Upon finishing his course, students will be able to work as a collaborative member of an inter-professional healthcare team to improve the quality of life of patients and communities through the integration of herbal medicine, phytotherapy, and aromatherapy. They will respect human rights, cultural diversity, and patient preferences while promoting evidence-based complementary therapies.**	
2.1.2	Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.	**2.1.1**	Demonstrate professional ethics in herbal medicine practice by respecting patients' rights, privacy, and cultural beliefs related to traditional remedies.
		2.1.2	Collaborate with healthcare professionals to integrate phytotherapy and aromatherapy safely within multidisciplinary treatment plans
		2.1.3	and caregivers about the benefits, limitations, and potential risks of medicinal plants and essential oils.
	2-2. Competency Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.	**Upon finishing his course, students will be able to standardize herbal and aromatic materials, formulate and manufacture natural pharmaceutical products, and participate in systems for the dispensing, storage, and distribution of herbal medicines, essential oils, and related medical devices.**	
2.2.2	Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/	**2.2.1**	Evaluate drug-induced disorders and drug interactions, including herb-drug, herb-food, and herb-disease interactions, with emphasis on safety and efficacy in phytotherapy and aromatherapy.
		2.2.2	Apply appropriate methods for the isolation, purification, and identification of compounds found in aromatherapy
		2.2.3	Formulate and prepare herbal medicinal products, nutraceuticals, and aromatherapy

			blends following GMP and quality assurance standards.
	2-4-Competency **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.**	**Upon finishing his course, students will be able to share professional decisions and take proper actions to save patients' lives in emergency situations, including poisoning with various xenobiotics. They will also be equipped to address emergencies related to the misuse or adverse effects of herbal and aromatic products. This competency will be developed via the following key elements:**	
2.4.1	Ensure safe handling/use of poisons to avoid their harm to individuals and communities.	**2.4.1**	Identify and manage cases of poisoning caused by medicinal plants, essential oils, or contaminated herbal products.
		2.4.2	Apply toxicological principles to assess the safety limits of phytochemicals and essential oil constituents.
2.4.3	Take actions to solve any identified medicine-related and pharmaceutical care problems.	**2.4.3**	Participate in the development of guidelines for safe handling, storage, and disposal of potentially toxic herbal substances.
	2-5-Competency **Contribute to pharmaceutical research studies and clinical trials needed to authorize medicinal products.**	**Upon finishing his course, students will be able to contribute to pharmaceutical research studies and clinical trials needed to authorize medicinal products, including herbal and aromatic therapies. They will apply their knowledge of phytotherapy and aromatherapy to design, conduct, and evaluate research that ensures the safety, efficacy, and quality of natural medicinal products.**	
2.5.2	Retrieve interpret, and critically evaluate evidence-based information needed in pharmacy profession.	**2.5.1**	Retrieve, interpret, and critically evaluate scientific literature related to herbal medicine, essential oils, and phytotherapy clinical trials.
		2.5.2	Participate in the design and execution of phytotherapy-related research, applying suitable experimental and analytical methods.

2.5.3	Contribute in planning and conducting research studies using appropriate methodologies.	**2.5.3**	Analyze and present research findings on herbal therapies in compliance with ethical standards for scientific publication.
	Domain 3: Pharmaceutical Care **3-2- Competency** **Provide counseling and education services to patients and communities about safe and rational use of medicines and medical devices.**	**Upon finishing his course, students will be able to provide counseling and education services to patients and communities about safe and rational use of complementary medicine.**	
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	Integrate the pharmacological profile of herbal medicines and essential oils, including their mechanism of action, therapeutic uses, dosing, contraindications, adverse reactions, and interactions with conventional drugs and foods.
		3.2.2	Effectively utilize herbal medicines, phytotherapy, nutraceuticals, and aromatherapy in the management of various diseases. Apply evidence-based approaches to incorporate complementary and alternative medicine into patient care while ensuring safety and efficacy.
3.2.3	Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.	3.2.3	Recognize evidence-based resources that can be used to assess the effectiveness of herbal medicine efficacy and safety
		3.2.4	Collaborate with healthcare professionals to promote patient awareness and safe use of herbal medicines in therapy based on recent evidence-based data.
3.2.4	Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.	3.2.5	Recognize symptoms and signs of poisoning or adverse reactions. And appropriate management
		3.2.6	Identify sources and causes of toxicity in herbal and aromatherapy products.
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.	3.2.7	Select appropriate OTC herbal and conventional preparations based on patient symptoms, and
		3.2.8	provide counseling for patients, healthcare professionals, and caregivers on the safe and proper use of herbal medicines, essential oils, and medical devices

3.2.6	Maintain public awareness on social health hazards of drug misuse and abuse.	3.2.9	Educate patients and the public on the safe use of herbal medicines and essential oils, highlighting the risks of misuse, abuse, and self-medication.
		3.2.10	promote evidence-based awareness of potential toxicities, drug–herb, and drug–aroma interactions to minimize health hazards and support safe therapeutic practice.
	Domain 4: Personal Practice **4-1- Competency** **Express leadership, time management, critical thinking, problem solving, independent and teamwork, creativity and entrepreneurial skills.**	**Upon finishing his course, students will be able to express leadership, time management, critical thinking, problem-solving, independent and team working, creativity, and entrepreneurial skills in the field of herbal medicine, phytotherapy, and aromatherapy.**	
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.	4.1.1	Demonstrate critical thinking, problem-solving, and creativity to evaluate and improve team performance in herbal medicine and phytotherapy projects
4.1.2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	4.1.2	Retrieve relevant information on herbal treatments and set realistic targets with a time plan to achieve therapeutic goals within deadlines.
	4-2- Competency **Effectively communicate verbally, non-verbally and in writing with individuals and communities.**	**Upon finishing his course, students will be able to effectively communicate verbally, non-verbally and in writing with individuals and communities.**	
4.2.1	Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care teams, patients, and communities.	4.2.1	Communicate clearly with patients, caregivers, and healthcare professionals about herbal and aromatherapy treatments.

4.2.2	Use contemporary technologies and media to demonstrate effective presentation skills.	4.2.2	Present phytotherapy and herbal medicine topics using recent technologies and multimedia tools.
	4-3- Competency **Express self-awareness and be a life-long learner for continuous professional improvement.**	**Upon finishing his course, students will be able to express self-awareness and be a life-long learner for continuous professional improvement.**	
4.3.1	Perform self-assessment to enhance professional and personal competencies.	4.3.1	Assess personal strengths and areas for improvement through reflection and peer feedback in herbal medicine practice.
4.3.2	Practice independent learning is needed for continuous professional development.	4.3.2	Stay updated with current guidelines, regulations, and research related to herbal and aromatherapy treatments
		4.3.3	Pursue continuous independent learning to enhance professional competence in phytotherapeutic and integrative medicine applications.

4. Teaching and Learning Methods

1- Lectures
2. Practical training/ laboratory
3. Class activity
4. E-learning
5. case studies

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-1	**4**	**2**	**2**		
2	Introduction-2	**4**	**2**	**2**		
3	Aromatherapy-1	**4**	**2**	**2**		
4	Aromatherapy-2	**4**	**2**	**2**		
5	Phytotherapy for CNS disorders	**4**	**2**	**2**		
6	Phytotherapy for GIT disorders	**4**	**2**	**2**		
7	**Mid-term exam**					
8	Phytotherapy for respiratory disorders	**4**	**2**	**2**		
9	Phytotherapy for metabolic disorders	**4**	**2**	**2**		
10	Phytotherapy for metabolic disorders	**4**	**2**	**2**		
11	Phytotherapy for Urinary tract disorders	**4**	**2**	**2**		
12	Phytotherapy for women health and skin disorders	**4**	**2**	**2**		
13	Phytotherapy for inflammatory disorders	**4**	**2**	**2**		
14	New trends in Phytotherapy	**2**	**2**	**P**ractical exam		
15	Revision	**2**	**2**	**P**ractical 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	Practical exam	14, 15	25	25%
3	Final exam	16, 17	50	50%
4	Oral	16, 17	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)	1-Heinrich, Michael, et al. *Fundamentals of Pharmacognosy and Phytotherapy E-Book*. Elsevier Health Sciences, 2023 2-Bone, Kerry, M. C. P. P. Simon Mills, and MA FNIMH. *Principles and practice of phytotherapy: modern herbal medicine*. Elsevier Health Sciences, 2013.
	Other References	- Notes on Phytotherapy prepared in the form of a book authorized by the department - Lab Manual of Phytotherapy prepared and distributed by the Department
	Electronic Sources (Links must be added)	www.biomedcentral.com www.medscape.com http://www.sciencedirect.com/ http://www.ncbi.nlm.nih.gov
	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 (Water baths, Microscopes)
	Supplies	-Class rooms. - Data show. - Computers. –Library. –Internet. -Interactive boards
	Electronic Programs	**----**
	Skill Labs/ Simulators	**----**
	Virtual Labs	**----**
	Other (to be mentioned)	

Name and Signature **Course Coordinator** **Assistant. Prof. Dr. Mai El Naggar**	**Name and Signature** **Program Coordinator** **Prof. Dr. Abdelaziz El Ashmawy**

Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Clinical Nutrition			
Course Code (according to the bylaw)	PB 905			
Department/s participating in delivery of the course	Biochemistry			
Number of credit hours/points of the course (according to the bylaw)	**Theoretical**	**Practical**	**Other (specify)**	**Total**
	1	1		2
Course Type	Compulsory			
Academic level at which the course is taught	Fifth level- First term			
Academic Program	Pharm D Clinical			
Faculty/Institute	Pharmacy			
University/Academy	Kafr El Sheikh			
Name of Course Coordinator	Dr/ Shimaa Ali			
Course Specification Approval Date	1/9/2025			
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 basic knowledge and skills necessary to maintain optimal health and prevent diseases through proper nutrition and trains the students to collaborate with other members of the health care team in the management of specialized nutrition conditions, illnesses, and problems.

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 clinical sciences to understand human nutrition, including macronutrient and micronutrient requirements, energy balance, and the role of vitamins, minerals, and gut microbiota in health. It also covers dietary planning and nutritional care across different life stages and health conditions, integrating principles of nutrigenomics to personalize nutrition strategies.** **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**	Recognize some basic background information about clinical nutrition, including BMR, energy balance, and RDA.
		1.1.2	Describe the role in metabolism and clinical significance of vitamins and minerals
		1.1.3	Discuss the enteral and parenteral nutrition and Electrolyte balance and imbalance
		1.1.4	Understand proper dietary care in different diseases, including diabetic patients, cardiovascular patients, renal patients, hepatic patients, and cancer 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**
1.1.2	**Utilize the proper pharmaceutical and medical terms, abbreviations, and symbols in pharmacy practice.**	**1.1.5**	Communicate efficiently and effectively with other healthcare teams using the proper pharmaceutical and medical terms, abbreviations, and symbols.
1.1.6	**Utilize scientific literature and collect and interpret information to enhance professional decisions.**	**1.1.6**	Recall information from different scientific literature to improve professional decision-making skills in the nutrition field.
1.1.7	**Identify and critically analyze newly emerging issues influencing the pharmaceutical industry and patient health care**	**1.1.7**	Estimate and investigate newly emerging issues affecting patient health care
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE **2-1- COMPETENCY**		**Upon finishing this course, students will be able to work collaboratively as members 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**	Achieve responsibilities and authorities in accordance with the legal and professional framework and the defined role of all members of the health care team.
2.1.2	**Adopt the ethics of health care and pharmacy profession, respecting patients' rights and valuing people diversity.**	**2.1.2**	Acquire ethical manners of health care and pharmacy, respect patients' rights, and value people's diversity.
2.1.3	**Recognize own personal and professional limitations and accept the conditions of referral to or guidance from other members of the health care team.**	**2.1.3**	Recognize self-professional limitations and accept guidance from other health care colleagues.
2-5- COMPETENCY		**Upon finishing this course, students will be able to** **Contribute in pharmaceutical research studies and clinical trials needed to authorize medicinal products.** **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**
2.5.2	**Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession.**	**2.2.1**	Interpret patient clinical data needed in the clinical nutrition profession.
2.5.3	**Contribute to planning and conducting research studies using appropriate methodologies.**	**2.2.2**	Contribute to a research team to plan and carry out research studies using suitable methodologies.
DOMAIN 3: PHARMACEUTICAL CARE **3-1- COMPETENCY**		**Upon finishing this course, students will be able to apply the principles of body biochemistry to participate in improving healthcare services using evidence-based information.** **This competency will be developed via the following key elements:**	
3.1.1	**Apply the principles of body function and the basis of genomics in health and disease states to manage different diseases.**	**3.1.1**	Make use of the basis of human physiology and genetics to help control different disorders and diseases by focusing on the nutritional aspect, to improve healthcare services.
3-2- COMPETENCY		**Provide counseling and education services to patients and communities about safe and rational use of nutraceuticals.** **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**	Develops individualized nutrition care plans based on disease pathophysiology (e.g., diabetes, obesity, renal disease, gastrointestinal disorders, cancer).
DOMAIN 4: PERSONAL PRACTICE **4-1- COMPETENCY**		**Upon finishing this course, students will be able to express leadership, time management, critical thinking, problem solving, independent and teamwork, creativity, and entrepreneurial skills.** **This competency will be developed via the following key elements:**	
4.1.1	**Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.**	**4.1.1**	Works cooperatively and respectfully with team members.

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**
4.1.2	**Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.**	**4.1.2**	**Demonstrate critical thinking skills, including problem-solving, creativity, and time management, in team performance evaluation.**
4-2- COMPETENCY		**Upon finishing this course, students will be able to effectively communicate verbally, non-verbally, and in writing with patients and the health care team.** **This competency will be developed via the following key elements:**	
4.2.1	**Demonstrate effective communication skills verbally, non-verbally, and in writing with a professional health care team, patients, and communities**	**4.2.1**	Communicate clearly by verbal and written means with patients and members of healthcare society.
4.2.2	**Use contemporary technologies and media to demonstrate effective presentation skills.**	**4.2.2**	Present clinical nutrition data and topics effectively using recent technology.
4-3- COMPETENCY		**Upon finishing this course, students will be able to express self-awareness and be lifelong learners for continuous professional improvement.** **This competency will be developed via the following key elements:**	
4.3.1	**Perform self-assessment to enhance professional and personal competencies.**	**4.3.1**	Collect and analyze information from different sources to determine self-merits/ limitations and improve professional and personal skills.
4.3.2	**Practice independent learning needed for continuous professional development.**	**4.3.2**	Track the continuous updates with respect to new regulations and guidelines.
		4.3.3	Learn independently to develop professional skills.

4. Teaching and Learning Methods

1. Lectures (√)
2. Practical training / laboratory (√)
3. Seminar / Workshop (√)
4. Class Activity (√)
5. E-learning (√)

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 clinical nutrition Basal metabolic rate (BMR) - Rcommended daily allowance (RDA)**	**3**	**1**	**2**		
2	**Macronutrients and calculation of calories**	**3**	**1**	**2**		
3	**Vitamins and minerals (role in metabolism – clinical significance)**	**3**	**1**	**2**		
4	**Enteral and parenteral nutrition**	**3**	**1**	**2**		
5	**Electrolyte balance and imbalance**	**3**	**1**	**2**		
6	**Nutrition and health**	**3**	**1**	**2**		
7	**Mid-term exam**	**3**	**1**	**2**		
8	**Obesity**	**3**	**1**	**2**		
9	**Dietary care for diabetic patients**	**3**	**1**	**2**		
10	**Dietary care for cardiovascular patients**	**3**	**1**	**2**		
11	**Dietary care for renal patients**	**3**	**1**	**2**		
12	**Dietary care for hepatic patients**	**3**	**1**	**2**		
13	**Dietary care for cancer patients**	**3**	**1**	**2**		
14	**Dietary care for pregnant and lactating women Dietary care for athletics**	**3**	**1**	**2**		
15	**Nutrigenomics**	**3**	**1**	**2**		

5. Methods of students' assessment

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

5	Assignments / Project /Portfolio/ Logbook	**3th week, 5th week, 8th week and 10th one**	**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- Michael Murphy Rajeev Srivastava Kevin Deans (2018) Clinical Biochemistry, 6th Edition, Elsevier.** **2- Elia, M., Ljungqvist, O., Stratton, R. J., & Lanham-New, S. A. (Eds.). (2023). Clinical Nutrition (2nd ed.). Wiley-Blackwell.**
	Other References	**Walker S, Ashby P, Rae P,Beckett G (2010): Lecture Notes Clinical Biochemistry, 8th edition, Blackwell Pub.USA.**
	Electronic Sources (Links must be added)	**www.highwire.com,www.google.com,www.pubmed.com &www.biomed.net**
	Learning Platforms (Links must be added)	
	Other (to be mentioned)	
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	**---**
	Supplies	**---**
	Electronic Programs	**---**
	Skill Labs/ Simulators	**---**
	Virtual Labs	**---**
	Other (to be mentioned)	Classrooms - Computers - Internet -Library -data show - Smart board

Course Plan

Course title: Clinical nutrition **Course code:** PB 905

Wk.	Topic	Key Elements	Teaching & Learning Methods	Student Assessment Methods
1	Introduction to clinical nutrition Basal metabolic rate (BMR) - Rcommended daily allowance (RDA)	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, ,2.1.1,2.1.2,2.1.3 ,2.2.1, 2.2.2, 2.3.1,2.3.2 ,3.1.1 ,4.1.1,4.1.2,4.2.1 ,4.3.1	Lectures, E-learning and practical training	Written, practical and oral exams
2	Macronutrients and calculation of calories	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, ,2.1.1,2.1.2,2.1.3 ,2.2.1, 2.2.2, 2.3.1,2.3.2 ,3.1.1, 3.2.1, ,4.1.1,4.1.2,4.2.1 ,4.3.1	Lectures, E-learning practical training, discussion and brain storming	Written, practical and oral exams
3	Vitamins and minerals (role in metabolism – clinical significance)	1.1.1,1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2 ,2.3.1, 3.1.1, 3.2.1, 4.1.1,4.1.2, 4.2.1,4.2.2,4.3.1, 4.3.2,4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams
4	Enteral and parenteral nutrition	1.1.1,1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2 ,2.3.1, 3.1.1, 3.2.1, 4.1.1,4.1.2,	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams

		4.2.1,4.2.2,4.3.1, 4.3.2,4.3.3		
5	Electrolyte balance and imbalance	1.1.1,1.1.2, 1.1.3,2.1.1,2.1.2, 2.3.1,2.3.2, 3.1.1, 3.2.1, 4.1.1,4.1.2, 4.2.1,4.2.2,4.3.1, 4.3.2,4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams
6	Nutrition and health	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2, 2.2.2, 2.3.1,2.3.2, 3.1.1, 3.2.1, 4.1.1,4.1.2, 4.2.1,4.3.1,4.3.2, 4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams
7	Mid-term exam			
8	Obesity	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2,2.3.1, 2.2.2, 2.3.2, 3.1.1, 3.2.1, 4.1.1,4.1.2, 4.2.1,4.3.1,4.3.2, 4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams
9	Dietary care for diabetic patients	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2, 2.2.2, 3.1.1, 3.2.1, 4.1.1,4.1.2, 4.2.1,4.3.1,4.3.2, 4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams

10	Dietary care for cardiovascular patients	1.1.1,1.1.2,1.1.3, 2.1.1,2.1.2, 2.2.2, 3.1.1, 3.2.1, 4.1.1,4.1.2, 4.2.1,4.3.1,4.3.2, 4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams
11	Dietary care for renal patients	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2, 2.2.2, 3.1.1,4.1.1,4.1.2, 4.1.3,4.2.1, 4.3.2,4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams
12	Dietary care for hepatic patients	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2,2.2.1, 3.1.1, 3.2.1, 4.1.1,4.1.2, 4.2.1,4.3.1,4.3.2, 4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams
13	Dietary care for cancer patients	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2,2.2.1, 2.2.2, 3.1.1, 3.2.1, 4.1.1,4.1.2, 4.2.1, 4.3.1,4.3.2,4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written, practical and oral exams
14	Dietary care for pregnant and lactating women Dietary care for athletics	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2,2.2.1, 2.2.2,3.1.1, 3.2.1, 4.1.1,4.1.2,	Lectures, E-learning and practical training, discussion and brain storming	Written and oral exams

		4.2.1,4.2.2,4.3.1, 4.3.2,4.3.3		
15	Nutrigenomics	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 2.1.1,2.1.2,2.2.1, ,3.1.1, 3.2.1, 4.1.1,4.1.2 ,4.2.1,4.2.2,4.3.1 ,4.3.2,4.3.3	Lectures, E-learning and practical training, discussion and brain storming	Written and oral exams

Name and Signature Course Coordinator	**Name and Signature Program Coordinator**
Dr/ Shimaa Ali	Prof/ Ahmed Amin

Course Specification

(2025)

Course Title (according to the bylaw)	**Marketing &Pharmacoeconomics**			
Course Code (according to the bylaw)	**NP 904**			
Department/s participating in delivery of the course	**Clinical pharmacy department**			
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	**Fifth level**			
Academic Program	**BSc in pharmacy (pharm-D clinical)**			
Faculty/Institute	**Faculty of Pharmacy**			
University/Academy	**Kafrelshiekh University**			
Name of Course Coordinator	**Associate. Prof.Ahmed Amin Ali** **Associate. Prof. Abdelaziz elsayed**			
Course Specification Approval Date	**31/8/2025**			
Course Specification Approval	**Department Counsil**			

2. Course Overview (Brief summary of scientific content)

the basic concepts of health economics, learning basic terms of health economics and understand key principles. Topics cover the economic mechanisms of health care markets as market failures, and government intervention. The course covers the key components of health care financing, and some methods of how to contain health care expenditure. Alongside the major definitions in health technology assessment, students should have an overview about different types of economic evaluation, budget impact analysis and their uses. Moreover, students should get familiar with different methods of pricing among which value-based pricing.

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		**Upon finishing 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:**	

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	pply administrative scienceA ,principles (planning, organizing controlling) to pharmaceutical .practice
		1.1.2	Understand managerial roles and & leadership theories (administrative (behavioral sciences
		1.1.3	Integrate administrative and social sciences in strategic goal setting .and marketing plan design
		1.1.4	Apply pharmaceutical science knowledge ethically in marketing while considering social responsibility
1.1.5	Retrieve information from fundamental sciences to solve therapeutic problems.	1.1.5	Apply knowledge of scientific principles to evaluate and improve management decisions that impact .therapeutic services
		1.1.6	Use pharmacological and biomedical data to inform strategic decisions that optimize therapeutic .outcomes

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**
		1.1.7	Apply behavioral science insights to understand how patient psychology and needs influence therapeutic .choices
Domain 2: Professional and Ethical Practice **2-2- Competency**		**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** **This competency will be developed via the following key elements:**	
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.	**2.2.1**	Apply quantitative and biostatistical methods to optimize resource allocation and workflow in pharmacy .practice
		2.2.2	Incorporate bioinformatics and statistical evidence into planning for innovative drug delivery and .therapeutic strategies
		2.2.3	Highlight the pharmacist's expertise in calculations, bioequivalence, and drug delivery systems to ensure evidence-based marketing
		2.2.4	Use biostatistical insights to understand population trends that influence therapeutic choices and .prescribing patterns
2-6- 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:**	

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**
2-6-1	Apply the principles of business administration and management to ensure rational use of financial and human resources.	**2.6.1**	Define and apply the functions of planning, organizing, leading, and controlling to optimize financial and .human resources in pharmacy practice
		2.6.2	Identify roles and responsibilities of managers; develop leadership, decision-making, and delegation skills.
		2.6.3	design and evaluate effective marketing plans for pharmaceutical products or services.
		2.6.4	Apply ethical and professional pharmacy standards in marketing; use clinical knowledge to ensure rational .medicine promotion
		2.6.5	Analyze psychological and practical factors influencing purchasing decisions .in healthcare markets
		2.6.6	Integrate product, price, place, and promotion strategies to meet business .and patient care goals
		2.6.7	Design ethical advertising; segment markets, select target audiences, and .position products effectively
		2.6.8	Apply structured sales stages from prospecting to closing, ensuring value and compliance in pharmacy sales.
		2.6.9	Use effective questioning techniques to uncover customer needs and improve service delivery.
		2.6.10	Monitor and assess customer feedback to enhance satisfaction and loyalty.

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**
		2.6.11	Identify and prioritize customer expectations; adapt pharmacy services accordingly.
		2.6.12	Implement systems to monitor safety and effectiveness of marketed products; use data to adjust strategies and comply with regulations.
2-6-2	Utilize the principles of drug promotion, sales, marketing, accounting, and pharmacoeconomic analysis.	**2.6.13**	Planning, organizing, leading, and controlling resources to achieve pharmaceutical marketing and sales .objectives
		2.6.14	Role of managers in decision-making, coordination, and performance monitoring within .pharmaceutical business operations
		2.6.15	,Setting long-term goals Plan identifying opportunities, and creating a structured marketing plan .for pharmaceutical products
		2.6.16	Applying pharmaceutical expertise to ethical promotion, bridging ,manufacturers, healthcare providers .and patients
		2.6.17	,Understanding psychological, social and economic factors influencing prescribers, pharmacists, and .patient decisions
		2.6.18	Managing product, price, place, and promotion to meet market needs while ensuring regulatory .compliance

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**
		2.6.19	Developing effective, ethical communication strategies to .highlight product benefits and safety
		2.6.20	& egmentation, TargetingS Dividing the Positioning (STP) ,market, selecting target segments and positioning products to address .specific healthcare needs
		2.6.21	Process from Sales Cycle → prospecting to follow-up: prospect approach → presentation → handle objections → close sale → follow- .up
		2.6.22	Using open- and closed-ended questions to uncover customer needs, build trust, and guide sales .conversations
		2.6.23	Managing feedback, addressing concerns, and maintaining strong .customer relationships
		2.6.24	Identifying and fulfilling unmet therapeutic needs through tailored .products and services
		2.6.25	Monitoring safety and effectiveness after product launch; reporting adverse events to regulatory .authorities
		2.6.26	Applying cost-minimization, cost-effectiveness, cost-utility, and cost-benefit studies to guide pricing and .formulary decisions

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**
		2.6.27	Tracking sales, expenses, and profits; budgeting for marketing and .promotional activities
Domain 4: Personal Practice 4-1- Competency		**Upon finishing this course, students will be able Express leadership, time management, critical thinking, problem solving,** **independent and teamwork, creativity and entrepreneurial skills.** **This competency will be developed via the following key elements:**	
4-1-1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.	**4.1.1**	,Work collaboratively to plan, organize lead, and control marketing and sales activities, ensuring tasks are completed .on time
		4.1.2	Share responsibility with team members, evaluate roles and contributions, and ensure smooth .coordination
		4.1.3	Contribute to team development of marketing strategies, ensuring deadlines .and objectives are met
			Collaborate with peers to integrate professional knowledge into marketing .efforts and assess each other's input
		4.1.4	Work as a team to research and analyze customer motives, assigning tasks .efficiently to meet project timelines
		4.1.5	Cooperate with the team to design product, price, place, and promotion plans; review peer contributions and .meet project schedules

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**
		4.1.6	Collaborate to create promotional ,materials, evaluate peers' creative input .and meet agreed timelines
		4.1.7	Work in teams to define market segments, assign research roles, review .peer findings, and deliver results on time
		4.1.8	,Collaborate to cover all sales steps evaluate each member's performance in role-play or practice, and manage the .timing of each phase
		4.1.9	Work in pairs or groups to practice questioning techniques, provide constructive peer feedback, and .complete exercises promptly
		4.1.10	Collaborate on strategies to handle customer feedback, assess peer approaches, and ensure timely follow-up .actions
4-1-2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	**4.1.11**	,Work collaboratively to plan organize, lead, and control ,marketing and sales activities ensuring tasks are completed on .time
		4.1.12	Share responsibility with team members, evaluate roles and contributions, and ensure smooth coordination.
		4.1.13	Contribute to team development of marketing strategies, ensuring deadlines and objectives are met.
		4.1.14	Collaborate with peers to integrate professional knowledge into marketing efforts and assess each other's input

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**
		4.1.15	Work as a team to research and analyze customer motives, assigning tasks efficiently to meet project timelines.
		4.1.16	Cooperate with the team to design product, price, place, and promotion plans; review peer contributions and meet project schedules.
		4.1.17	Collaborate to create promotional materials, evaluate peers' creative input, and meet agreed timelines.
		4.1.18	Work in teams to define market segments, assign research roles, review peer findings, and deliver results on time.
		4.1.19	Collaborate to cover all sales steps, evaluate each member's performance in role-play or practice, and manage the timing of each phase.
		4.1.20	Work in pairs or groups to practice questioning techniques, provide constructive peer feedback, and complete exercises promptly.
		4.1.21	Collaborate on strategies to handle customer feedback, assess peer approaches, and ensure timely follow-up actions.
		4.1.22	Work as a team to identify and meet customer needs, evaluating peer research and ensuring tasks are completed within deadlines.
		4.1.23	Collaborate to collect and analyze post-launch data, share responsibilities fairly,

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**
			review peer accuracy, and submit findings on time.
4-1-3	Demonstrate creativity and apply entrepreneurial skills within a simulated entrepreneurial activity.	**4.1.24**	Apply innovative approaches to planning, organizing, leading, and controlling simulated marketing and sales projects.
		4.1.25	Use creative leadership techniques to inspire team members and solve problems in simulated business settings.
		4.1.26	Develop unique marketing strategies and creative plans for pharmaceutical products in a simulated market environment.
		4.1.27	Integrate professional pharmacy expertise into creative marketing ideas that add value in a simulated business scenario.
		4.1.28	Creatively analyze and respond to customer motives, tailoring product promotions in the simulated market.
		4.1.29	Create and simulate innovative product, price, place, and promotion strategies for a competitive advantage.
		4.1.30	Develop creative promotional campaigns that comply with ethical and regulatory standards.
		4.1.31	Use innovative thinking to identify niche markets, target them effectively, and position products uniquely in simulations.

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**
		4.1.32	Simulate the full sales process using creative presentation, persuasion, and closing techniques.
		4.1.33	Apply inventive questioning strategies to uncover customer needs and improve sales interactions in simulations.
		4.1.34	Creatively address customer feedback and objections in simulated scenarios to strengthen relationships.
		4.1.35	Design innovative solutions and product concepts to meet simulated market needs.
		4.1.36	Use creative methods to monitor and report product performance and safety in a simulated post-launch environment.
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 competence will be developed via the following key elements:**	
4-2-1	Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care teams, patients, and communities.	**4.2.1**	Communicate clearly and ,professionally when planning organizing, and coordinating marketing and sales activities with .team members
		4.2.2	Use verbal and non-verbal skills to lead, motivate, and guide teams effectively in a management 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**
		4.2.3	Present marketing strategies in a Plan clear, persuasive manner to colleagues and stakeholders.
		4.2.4	Explain pharmaceutical product benefits and uses effectively to healthcare teams, patients, and the community.
		4.2.5	Use active listening and clear communication to understand and respond to customer purchasing motives.
		4.2.6	Communicate marketing mix strategies in a clear, professional manner during planning and promotional activities.
		4.2.7	Deliver persuasive messages through verbal presentations, written materials, and visual media.
		4.2.8	Clearly explain chosen segments, target audiences, and positioning strategies to the team and stakeholders.
		4.2.9	Use effective verbal and non-verbal communication at each stage of the sales process to engage clients.

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**
		4.2.10	Apply questioning techniques and active listening to foster meaningful dialogues with customers.
		4.2.11	Communicate empathetically and professionally when addressing customer inquiries or complaints.
		4.2.12	Clearly convey proposed solutions to meet identified customer needs in discussions and reports.
		4.2.13	Present post-marketing findings verbally and in writing to regulatory bodies, healthcare teams, and the community.
4-2-2	Use contemporary technologies and media to demonstrate effective presentation skills	**4.2.14**	Use digital tools (e.g., PowerPoint, project management software) to present planning, organizing, and leadership processes effectively.
		4.2.15	Apply multimedia presentations to communicate management roles, responsibilities, and performance strategies.
		4.2.16	Use visual aids, infographics, and presentation software to showcase marketing strategies and action plans.

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**
		4.2.17	Present the pharmacist's role in marketing using videos, animations, or interactive media.
		4.2.18	Use digital surveys, charts, and data visualization tools to present customer buying behavior insights.
		4.2.19	Use visual and digital media to present product, price, place, and promotion strategies effectively.
		4.2.20	Design multimedia advertising mock-ups or campaigns using contemporary design tools.
		4.2.21	Use data visualization and presentation software to clearly communicate STP strategies.
		4.2.22	Demonstrate each stage of the sales process through role-play videos or interactive slides.
		4.2.23	Create training videos or interactive presentations to showcase effective questioning techniques.

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**
		4.2.24	Use technology to present strategies for addressing and resolving customer concerns.
		4.2.25	Present customer needs analysis using digital charts, dashboards, and visual storytelling.
		4.2.26	Use databases, graphs, and interactive dashboards to present post-launch safety and performance data.
4-3- Competency		**Upon finishing this course, students will be able to Express self-awareness and be a life-long learner for continuous professional improvement.** **This competency will be developed via the following key elements:**	
4-3-1	Perform self-assessment to enhance professional and personal competencies.	**4.3.1**	,Reflect on your role in planning organizing, and controlling activities to identify strengths and areas for .improvement
		4.3.2	Assess your leadership and management skills to enhance decision-making and .coordination abilities

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**
		4.3.3	Review your contributions to strategy development to improve analytical and .planning skills
		4.3.4	Evaluate your ability to integrate pharmaceutical expertise into marketing activities and identify opportunities for .growth
		4.3.5	Assess your understanding of customer motivations and refine techniques for .better market insight
		4.3.6	Review your application of the marketing mix to strengthen creativity .and strategic thinking
		4.3.7	Reflect on your ability to design effective and ethical promotional .materials
		4.3.8	Assess your market analysis skills and ability to select and position products .effectively
		4.3.9	Evaluate your effectiveness in each stage of the sales cycle to enhance .selling techniques
		4.3.10	Reflect on your questioning methods and adjust them to improve information .gathering and relationship building

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**
		4.3.11	Assess your responsiveness and empathy in handling customer .interactions
		4.3.12	Evaluate your ability to identify and address customer needs accurately and .efficiently
		4.3.13	Review your skills in monitoring and reporting post-launch product data to ensure ongoing professional .development
4-3-2	Practice independent learning is needed for continuous professional development.	**4.3.14**	Independently study new management models and apply them to improve planning, organizing, and leadership skills.
		4.3.15	Seek out resources on leadership styles and management techniques to enhance professional capabilities.
		4.3.16	Research updated marketing strategies and planning tools to strengthen strategic thinking.
		4.3.17	Learn independently about evolving pharmacist roles in marketing and adapt to emerging trends.

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**
		4.3.18	Explore market research literature and case studies to better understand and predict customer behavior.
		4.3.19	Research innovative approaches to the marketing mix to enhance creativity and effectiveness.
		4.3.20	Stay updated on new advertising methods, digital tools, and ethical guidelines.
		4.3.21	Independently study market segmentation analytics and positioning techniques to improve decision-making.
		4.3.22	Learn and practice modern sales techniques through self-study and online training.
		4.3.23	Research advanced questioning strategies and apply them to improve customer interactions.
		4.3.24	Learn new approaches for managing customer feedback and complaints effectively.
		4.3.25	Stay informed on evolving customer expectations and needs through independent research.
		4.3.26	Study new pharmacovigilance methods and tools to enhance post-launch product monitoring skills.

4. Teaching and Learning Methods

.1- **Lectures** **(√)**

1- **E-learning** **(√)**

2- **Discussion** **(√)**

3- **Brainstorming (√)**

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	The Management Process	**2**	**2**	---	---	---
2	Managers and Management	**2**	**2**	---	---	---
3	Strategic Planning &Marketing plan	**2**	**2**	---	---	---
4	Importance of professional pharmacist in marketing	**2**	**2**	----	---	---
5	Managers and Management- The Management Process	**2**	**2**	---	---	---
6	Buying motives	**2**	**2**	---	---	---
7	**Periodical exam**					
8	Pharmaceutical marketing- Sales &Marketing Mix	**2**	**2**	----	---	---
9	-Basics of advertising and promotion- Segmentation, Targeting & Positioning	**2**	**2**	----	---	---
10	Sales cycle	**2**	**2**	---	---	---
11	art of questioning	**2**	**2**	----	---	---
12	Customer response	**2**	**2**	----	---	---
13	Customer needs	**2**	**2**	-----	---	---
14	Post marketing surveillance	**2**	**2**			
15	Post marketing surveillance	**2**	**2**			

5. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Periodical exam	Week 7	15 marks	15%
2	Final Written Exam	Week 16,17	85 marks	85%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	The main (essential) reference for the course	Kotler, Philip & Keller, Kevin Lane. Marketing Management, latest edition. Kotler, Philip & Armstrong, Gary. Principles of Marketing, latest edition.
	Other References	Lamb, Charles W., Hair, Joseph F., & McDaniel, Carl. Marketing, latest edition. Alkhateeb, Fadi M., & Latif, David A. Pharmaceutical Marketing: Principles, Environment, and Practice.
	Electronic Sources	https://blog.hubspot.com/marketing https://www.thinkwithgoogle.com https://www.pharma-mkting.com https://www.fiercepharma.com/marketing
	Learning Platforms	**https://www.coursera.org** **https://www.linkedin.com/learning**
	Other	https://www.pharmamarketinguniversity.com https://www.fiercepharma.com/marketing
Supportive facilities & equipment	Devices/Instruments	- Data show. - Computers.

for teaching and learning *		–Library. –Internet. -Interactive boards and distant learning unit
	Supplies	Classrooms. -Educational pharmacy
	Electronic Programs	**/https://www.mdcalc.com**
	Skill Labs/ Simulators	-Educational pharmacy

Course Plan

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

Course title: Management of dermatological, reproductive and musculoskeletal diseases.
Course code: P009

Course Contents		**Key elements**	**Teaching and Learning Methods**	**Student Assessment Methods**
Week # 1	The Management Process	1.1.1,2.2.1, 2.6.1 , 2.6.13,4.1.1,4.1.11,4.1.24,4.2.1,4.2.14,4.3.1,4.3.14	Lectures, E-learning	Written, and oral exams
Week # 2	Managers and Management	1.1.2,2.2.3,2.6.2 , 2.6.14,4.1.2,4.1.12,4.1.25,4.2.2,4.2.15,4.3.2,4.3.15	Lectures, E-learning, practical training and class activities	Written,and oral exams
Week # 3	Strategic Planning &Marketing plan	1.1.3,2.2,2.6.3 , 2.6.15,4.1.3,4.1.13,4.1.26,4.2.3,4.2.16,4.3.3,4.3.16	Lectures, E-learning, practical training and class activities	Written,and oral exams

Week # 4	Importance of professional pharmacist in marketing	1.1.4,2.2.3,2.6.4 , 2.6.16,4.1.4,4.1.14,4.1.27,4.2.4,4.2.17,4.3.4,4.3.17	Lectures, E-learning, practical training and class activities	Written, and oral exams
Week # 5	Managers and Management- The Management Process	1.1.5,1.1.3,2.2.4,2.6.5 , 2.6.17,4.1.5,4.1.15,4.1.28,4.2.5,4.2.18,4.3.5,4.3.18	Lectures, E-learning, practical training and class activities	Written, and oral exams
Week # 6	Buying motives	1.1.6,2.2.4,2.6.6 , 2.6.18,4.1.6,4.1.16,4.1.29,4.2.6,4.2.19,4.3.6,4.3.19	Lectures, E-learning, practical training and class activities	Written, and oral exams
Week # 7	**Periodical exam**			
Week # 8	Pharmaceutical marketing- Sales &Marketing Mix	1.1.7,2.2.4,2.6.7 , 2.6.19,4.1.7,4.1.17,4.1.30,4.2.7,4.2.20,4.3.7,4.3.20	Lectures, E-learning, practical training and class activities	Written, and oral exams
Week # 9	Basics of advertising and promotion- Segmentation, Targeting & Positioning	1.1.7,2.2.4,2.6.7,2.6.8 , 2.6.20,4.1.8,4.1.18,4.1.31,4.2.8,4.2.21,4.3.8,4.3.21	Lectures, E-learning, practical training and class activities	Written, and oral exams
Week # 10	Sales cycle	1.1.7,2.2.4,2.6.7,2.6.9, 2.6.21,4.1.9,4.1.19,4.1.32,4.2.9,4.2.22,4.3.9,4.3.22	Lectures, E-learning, practical training and class activities	Written, and oral exams

Week # 11	art of questioning	1.1.7,2.2.4,2.6.7 ,2.6.10, 2.6.22,4.1.10,4.1.20,4.1.33,4.2.10,4.2.23,4.3.10,4.3.23	Lectures, E-learning, practical training, seminars and class activities	Written, and oral exams
Week # 12	Customer response	1.1.7,2.2.4,2.6.7 ,2.6.11, 2.6.23,4.1.11,4.1.21,4.1.34,4.2.11,4.2.24,4.3.11,4.3.24	Lectures, E-learning, seminars and practical training	Written, and oral exams
Week # 13	Customer needs	1.1.7,2.2.4,2.6.7,2.6.12, 2.6.24,4.1.12,4.1.22,4.1.35,4.2.12,4.2.25,4.3.12,4.3.25	Lectures and E-learning	Written, and oral exams
Week # 14	post marketing surveillance	1.1.7,2.2.4,2.6.7 , 2.6.13, 2.6.25,4.1.13,4.1.23,4.1.36,4.2.13,4.2.26,4.3.13,4.3.26	Lectures and E-learning	Written and oral exams
Week # 15	post marketing surveillance	1.1.7,2.2.4,2.6.7 , 2.6.13, 2.6.25,4.1.13,4.1.23,4.1.36,4.2.13,4.2.26,4.3.13,4.3.26	Lectures and E-learning	Written and oral exams

Name and Signature
Course Coordinator
Associate. Prof. Abdelaziz elsayed
Associate. Prof. Ahmed Amin Ali

Name and Signature
Program Coordinator

Associate. Prof. Ahmed Amin Ali

Kafrelsheikh University

Faculty of Pharmacy

جامعة كفر الشيخ

كلية الصيدلة

Course Specification

1. Basic Information

Course Title (according to the bylaw)	Entrepreneurship			
Course Code (according to the bylaw)	NP 905			
Department/s participating in delivery of the course	Pharmaceutical Analytical 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	Level (5)			
Academic Program	Bachelor in pharmacy (Pharm D Clinical)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Dr. Waleed Hemdan			
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 outlines the process of designing, launching and running a new business, which is often initially a small business. The people who create these businesses are called entrepreneurs. Entrepreneurship has been described as the "capacity and willingness to develop, organize and manage a business venture along with any of its risks in order to make a profit. While definitions of entrepreneurship typically focus on the launching and running of businesses, due to the high risks involved in launching a start-up, a significant proportion of start-up businesses have to close due to "lack of funding, bad business decisions, an economic crisis, lack of market demand, or a combination of all of these.

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, Graduates will be able to integrate knowledge in leadership, business, and financial skills in pharmacy practice. This competency will be developed through understanding the following key elements:**	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Enhance a student's knowledge in leadership, business, and financial skills in pharmacy practice.

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 2: PROFESSIONAL AND ETHICAL PRACTICE **2-1- COMPETENCY**		**Upon finishing this course, Graduates will be able to work as a collaborative member of an inter-professional health care team to improve the quality of life of patients and communities, and respect human rights.** **This competency will be developed via the following key elements:**	
2.1.3	Recognize own personal and professional limitations and accept the conditions of referral to or guidance from other members of the health care team.	**2.1.1**	Understand that Innovation Isn't Easy! Managing Innovation and Entrepreneurship
		2.1.2	. Recognize Dimensions of Innovation: What Can We Change?
2-6- COMPETENCY		**Upon finishing this course, Graduates will be able to perform pharmacoeconomic analysis and develop promotion, sales, marketing, and business administration skills.** **This competency will be developed via the following key elements:**	
2.6.1	Apply the principles of business administration and management to ensure rational use of financial and human resources.	**2.6.1**	Apply basic concepts of entrepreneurship with a specific focus on pharmacy practice and patient care programs.
2.6.2	Utilize the principles of drug promotion, sales, marketing,	**2.6.2**	Utilize essential knowledge of leadership, business, and financial skills in pharmacy practice

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**
	accounting, and pharmaco-economic analysis	2.6.3	Learn Motivation: Why Do It? Recognize Sustainability-led Innovation.
Domain 4: Personal Practice **4-1- Competency**		**Upon finishing this course, students will be able to express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.** **This competency will be developed via the following key elements:**	
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills .	4.1.1	Demonstrate critical thinking, problem-solving, creativity, time management and decision-making abilities to evaluate team performance as well as team members. .
4.1.2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	4.1.2	. Apply skills of Interact independently or as a part of team in different pharmaceutical field
4.1.3	Demonstrate creativity and apply entrepreneurial skills within a simulated entrepreneurial activity	4.1.3	Retrieve information; and set realistic targets and time plan to accomplish a required mission in deadlines

Domain 4: Personal Practice **4-2- Competency**	**Upon finishing this course, Graduates 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 demonip9-strate effective presentation skills.	4.2.1	Show the ability to effectively present a topic of interest using recent technologies. .

Domain 4: Personal Practice **4-3- Competency**		**Upon finishing this course, Graduates will be able to express self-awareness and be a life-long learner for continuous professional improvement.** **This competency will be developed via the following key elements:**	
4.3.1	Perform self-assessment to enhance professional and personal competencies.	4.3.1	Collect and analyze information from different sources to determine self- merits/ limitations and improve professional and personal skills.
4.3.2	Practice independent learning needed for continuous professional development.	4.3.2	Learn independently to develop professional skills.

3. Teaching and Learning Methods

1. . Lectures
2. E-learning
3. Practical training/ laboratory
4. Class activity
5. Seminars
6. Assignment
7. 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	**Chapter 1: The Innovation Imperative** Innovation Matters Innovation and Entrepreneurship	**1**	**1**			
2	Innovation Isn't Easy! Managing Innovation and Entrepreneurship	**1**	**1**			
3	Dimensions of Innovation: What Can We Change?	**1**	**1**			
4	A Process Model for Innovation and Entrepreneurship	**1**	**1**			
5	How Can We Make Change Happen?	**1**	**1**			
6	What, Why and When: The Challenge of Innovation Strategy Chapter Summary Key Terms Defined	**1**	**1**			
7	**Periodical exam**					
8	**Chapter 2: Social Innovation** What Is 'Social Innovation'?	**1**	**1**			
9	Different Players Motivation: Why Do It?	**1**	**1**			
10	Enabling Social Innovation	**1**	**1**			

11	The Challenges of Social Entrepreneurship Chapter Summary References.	**1**	**1**			
12	**Chapter 3: Sustainability-led Innovation** The Challenge of Sustainability-led Innovation .	**1**	**1**			
13	We've Seen This Before Sustainability-led Innovation	**1**	**1**			
14	Different Players Motivation: Why Do It?	**1**	**1**			
15	A Framework Model for Sustainability-led Innovation Responsible Innovation References	**1**	**1**			

4. 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	85	85 %

5. 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. DOLLINGER, Marc J. *Entrepreneurship*. Marsh Publications, 2008. 2. HISRICH, Robert D.; PETERS, Michael P.; SHEPHERD, Dean A. *Entrepreneurship*. McGraw-Hill Education, 2017.

	Other References	Notes prepared by the department staff.
	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**
	Other (to be mentioned)	
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	**----**
	Supplies	**-----**
	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 Entrepreneurship

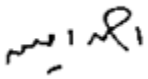
Course code: NP 905

Course Contents		**Key elements**	**Teaching and Learning Methods**	**Student Assessment Methods**
Week # 1	**Chapter 1: The Innovation Imperative** Innovation Matters Innovation and Entrepreneurship	1.1.1, 2.6.1, 2.6.	Lectures, E-learning, and class activities	Written exam
Week # 2	Innovation Isn't Easy! Managing Innovation and Entrepreneurship	1.1.1, 2.1.1 ,2.6.1, 2.6.2, 4.1.1, 4.1.2	Lectures, E-learning, and class activities	Written exam

Week # 3	Dimensions of Innovation: What Can We Change?	2.1.2, 2.6.1, 2.6.2, 4.1.1, 4.1.2, 4.1.3,	Lectures, E-learning, and class activities	Written exam
Week # 4	A Process Model for Innovation and Entrepreneurship	1.1.1, 2.6.1, 2.6.2, 4.1.1, 4.1.2	Lectures, E-learning, and class activities	Written exam
Week # 5	How Can We Make Change Happen?	1.1.1, 2.6.1, 2.6.2	Lectures, E-learning, and class activities	Written exam
Week # 6	What, Why and When: The Challenge of Innovation Strategy Chapter Summary Key Terms Defined	1.1.1, 2.6.1, 2.6.2, 4.1.1, 4.1.2, 4.1.3,	Lectures, E-learning, and class activities	Written exam
Week # 7	**Periodical exam**			
Week # 8	**Chapter 2: Social Innovation** What Is 'Social Innovation'?	1.1.1, 2.6.1, 2.6.2, 4.1.1, 4.1.2, 4.1.3, 4.2.1	Lectures, E-learning, and class activities	Written exam
Week # 9	Different Players Motivation: Why Do It?	1.1.1, 2.6.1, 2.6.2, 2.6.3, 4.1.1, 4.1.2, 4.1.3, 4.2.1,	Lectures, E-learning, and class activities	Written exam
Week # 10	Enabling Social Innovation	1.1.1, 2.6.1, 2.6.2, 4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.3.1, 4.3.2	Lectures, E-learning, and class activities	Written exam
Week # 11	The Challenges of Social Entrepreneurship Chapter Summary	1.1.1, 2.6.1, 2.6.2, 4.1.1, 4.1.2, 4.1.3,	Lectures, E-learning, seminars and class activities	Written exam

	References	4.2.1, 4.3.1, 4.3.2		
Week # 12	**Chapter 3: Sustainability-led Innovation** The Challenge of Sustainability-led Innovation .	1.1.1, 2.6.1, 2.6.2, 4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.3.1, 4.3.2.	Lectures, E-learning, and seminars	Written exam
Week # 13	We've Seen This Before Sustainability-led Innovation	1.1.1, 2.6.1, 2.6.2, 2.6.3, 4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.3.1, 4.3.2	Lectures and E-learning	Written exam
Week # 14	Different Players Motivation: Why Do It?	1.1.1, 2.6.1, 2.6.2, 4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.3.1, 4.3.2	Lectures and E-learning	Written exam
Week # 15	A Framework Model for Sustainability-led Innovation Responsible Innovation References	1.1.1, 2.6.1, 2.6.2, 4.1.1, 4.1.2, 4.1.3, 4.2.1, 4.3.1, 4.3.2	Lectures and E-learning	Written exam

Name and Signature Course Coordinator	Name and Signature Program Coordinator
Dr. Waleed Hemdan	Dr. Ahmed Amin



Course Specification

(2025)

Course Title (according to the bylaw)	**Geriatric Pharmacotherapy (Elective course)**			
Course Code (according to the bylaw)	**PP E15**			
Department/s participating in delivery of the course	**Clinical pharmacy department**			
Number of credit hours/points of the course (according to the bylaw)	**Theoretical**	**Practical**	**Other (specify)**	**Total**
	1	**1**	**----**	**2**
Course Type	**Elective**			
Academic level at which the course is taught	**Fifth level**			
Academic Program	**BSc in pharmacy (pharm-D clinical)**			
Faculty/Institute	**Faculty of Pharmacy**			
University/Academy	**Kafrelshiekh University**			
Name of Course Coordinator	**Associate. Prof. Noha Mahmoud El-Khodary** **Associate. Prof. Ahmed Amin Ali**			
Course Specification Approval Date	**31/8/2025**			
Course Specification Approval	**Department Counsil**			

2. Course Overview (Brief summary of scientific content)

This course covers the critical issues of aging, and the importance of team-based health care for geriatric in long term care facilities. The Geriatrics course is designed to provide students with the knowledge, skills, and experience to recognize and approach common problems in older adults in inpatient and outpatient settings as well as in the nursing home.

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 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, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Describe physiological changes in aging that affect pharmacokinetics and pharmacodynamics.
		1.1.2	Identify healthcare system and administrative considerations in geriatric medication management.
		1.1.3	Understand psychosocial aspects of aging, including isolation and mental health.
1.1.4	Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate their appropriateness, effectiveness, and safety in individuals and populations.	1.1.4	Explain how renal and hepatic function decline affects drug dosing in older adults.
		1.1.5	Compare effectiveness and safety of medications for common geriatric syndromes (e.g., insomnia, incontinence).
		1.1.6	Evaluate appropriateness of high-risk drugs using tools like Beers Criteria.

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	Retrieve information from fundamental sciences to solve therapeutic problems.	1.1.7	Use pharmacokinetic data to adjust antibiotic dosing in elderly with renal impairment.
		1.1.8	Apply pharmacodynamic principles when selecting antihypertensives for elderly patients.
		1.1.9	Interpret lab results (e.g., creatinine clearance, INR) to optimize therapy and identify drug-related causes of falls, confusion, or hypotension.
1.1.6	Utilize scientific literature and collect and interpret information to enhance professional decisions.	1.1.10	Review clinical trials involving elderly populations.
		1.1.11	Use literature to make decisions.
1.1.7	Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.	1.1.12	Evaluate new drug formulations tailored for elderly use (e.g., easy-to-swallow tablets).
		1.1.13	Discuss public health policies related to elderly medication safety.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE **2-1- COMPETENCY**		**Upon finishing this course, students will be able 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	Ensure informed consent and respect autonomy in elderly patients with cognitive decline.
		2.1.2	Recognize cultural differences in elderly health beliefs and medication use.
		2.1.3	Protect confidentiality when discussing medication regimens with caregivers.
2.1.3	Recognize your own personal and professional limitations and accept the conditions of referral to or	2.1.4	Identify cases requiring palliative care input.

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**
	guidance from other members of the health care team .	2.1.5	Collaborate with physiotherapists, dietitians, and occupational therapists.
		2.1.6	Seek other health care members' advice for complex polypharmacy cases.
2-2- COMPETENCY		**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. This competence will be developed via the following key elements:**	
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.	2.2.1	Apply PK/PD principles to minimize toxicity risk as calculating creatinine clearance using age-adjusted formulas.
		2.2.2	Adjust dosing regimens based on altered body composition in elderly.
2-4- COMPETENCY		**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.** **This competency will be developed via the following key elements:**	
2.4.3	Take actions to solve any identified medicine-related and pharmaceutical care problems .	2.4.1	Resolve adverse effects caused by inappropriate medications.
		2.4.2	Deprescribe unnecessary drugs to reduce pill burden and manage drug interactions in polypharmacy.

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**
		2.4.3	Address nonadherence in long-term regimens.
2-5- COMPETENCY		**Upon finishing 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	Use updated guidelines to compare different treatments options and review safety profiles of medications.
		2.5.2	Evaluate effectiveness of dietary supplements in different health conditions.
		2.5.3	Assess role of complementary medicine.
2.5.3	Contribute in planning and conducting research studies using appropriate methodologies.	2.5.4	Acquire the basics to Collect data on medication adherence in elderly populations.
		2.5.5	Learn how to design a survey on quality-of-life in chronic patients.
		2.5.6	Contribute to designing surveys assessing elderly patients ' satisfaction with medication counseling.
DOMAIN 3: Pharmaceutical Care **3-1- COMPETENCY**		**Upon finishing this course, students will be able to apply the 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	Apply the principles of body function and the basis of genomics in health and disease states to manage different diseases.	3.1.1	Explain the impact of age-related organ decline on drug response.
		3.1.2	Discuss genetic variations affecting drug metabolism in elderly.
3.1.3	Monitor and control microbial growth and carry out laboratory tests	3.1.3	Interpret urine cultures in elderly UTI cases.

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**
	for identification of infections/ diseases.	3.1.4	Use lab results to adjust antibiotic dosing.
3.1.4	Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutic approaches	3.1.5	Integrate clinical signs, lab results, and treatment options in management of different conditions.
		3.1.6	Relate disease pathogenesis with drug regimen selection and monitoring.
		3.1.7	Explain the rationale behind topical vs systemic agents based on disease site and severity.
3-2- COMPETENCY		**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. This competency will be developed via the following key elements:**	
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	Describe MOA, ADRs, and dosing considerations for drugs commonly used in elderly.
		3.2.2	Identify high-risk medications and safer alternatives and compare therapeutic options for chronic diseases in elderly.
3.2.2	Apply the principles of clinical pharmacology and pharmacovigilance for the rational use of medicines and medical devices.	3.2.3	Monitor serum drug levels for narrow therapeutic index drugs.
		3.2.4	Adjust therapy based on monitoring results.
		3.2.5	Educate on safe medication storage and disposal.
3.2.3	Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals	3.2.6	Counsel on safe use of herbal supplements with chronic medications.
		3.2.7	Identify risks of herbal-drug interactions in elderly.

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**
3.2.4	Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.	3.2.8	Manage common medications toxicities such as NSAID-induced GI bleeding.
		3.2.9	Provide management steps for drug overuse/misuse
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.	3.2.10	Advise on adherence strategies using pill organizers
		3.2.11	Educate patients and healthcare professionals on safe selection and use of OTC medications.
		3.2.12	Counsel caregivers on medication administration
3.2.6	Maintain public awareness on social health hazards of drug misuse and abuse.	3.2.13	Educate the public on the dangers of unsupervised long-term use of OTC NSAIDs.
		3.2.14	Discuss dangers of polypharmacy without medical supervision
DOMAIN 4: Personal Practice **4-1- COMPETENCY**		**Upon finishing this course, students will be able to express leadership, time management, critical thinking, problem solving,** **independent and teamwork, creativity and entrepreneurial skills** **This competency will be developed via the following key elements:**	
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.	4.1.1	Participate in interdisciplinary teams managing different geriatrics conditions and prioritize patient cases with urgent concerns.
		4.1.2	Manage tasks in collaborative projects on chronic disease monitoring and evaluate peer contributions during group assignments.
4.1.2	Retrieve and critically analyze information, identify and solve	4.1.3	Research treatment guidelines for rare disorders and independently assess medication plans.

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, and work autonomously and effectively in a team.	4.1.4	Solve therapeutic dilemmas in conflicting comorbidities and demonstrate initiative in tackling nonadherence issues.
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:**	
4.2.1	Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care teams, patients, and communities	4.2.1	Communicate counseling information clearly to patients and discuss chronic treatment plans with empathy and adjust complex regimens independently
		4.2.2	Provide community education on different skin or reproductive health issues.
4.2.2	Use contemporary technologies and media to demonstrate effective presentation skills.	4.2.3	Prepare digital presentations on major Geriatric diseases topics.
		4.2.4	Use medication reminder apps adapted for elderly.
4-3- COMPETENCY		**Upon finishing this course, students will be able to express self-awareness and be a life-long learner for continuous professional improvement. This competency will be developed via the following key elements:**	
4.3.1	Perform self-assessment to enhance professional and personal competencies.	4.3.1	Identify gaps in geriatric-specific pharmacotherapy knowledge.
		4.3.2	Identify improvement areas after peer evaluation and plan steps to improve therapeutic counseling skills.
4.3.2	Practice independent learning is needed for continuous professional development.	4.3.3	Seek new research on emerging therapies and track the continuous updates with respect to new regulations and guidelines.

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**
		4.3.4	Maintain a learning portfolio on Geriatrics pharmacotherapy and learn independently to develop professional skills.

4. Teaching and Learning Methods

.1- **Lectures** (√)

2- **E-learning** (√)

3- **Practical training/ laboratory** (√)

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	Introduction to geriatrics pharmacotherapy	3	1	2	---	---
2	Urinary incontinence	3	1	2	---	---
3	Benign prostatic hypertrophy	3	1	2	---	---
4	Osteoarthritis	3	1	2	---	---
5	Osteoarthritis (cont.)	3	1	2	---	---
6	Rheumatoid arthritis	3	1	2	---	---
7	Periodical exam					
8	Ager-related macular degeneration and cataract	3	1	2	---	---
9	Gout and hyperuricemia	3	1	2	---	---
10	Osteoporosis	3	1	2	---	---
11	Osteomalacia	3	1	2	---	---
12	Alzheimer disease	3	1	2	---	---
13	Fibromyalgia	3	1	2	---	---
14	Peripheral neuropathy	1	1	Practical exam		
15	Revision	1	1	Practical exam		

5. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Periodical exam	Week 7	10 marks	10%
2	Final Written Exam	Week 16,17	50 marks	50%
3	Final Practical/Clinical/… Exam	Week 14,15	15 marks	15%
4	Final Oral Exam	Week 16,17	10 marks	10%
5	Assignments / Project /Rubric/ Logbook	All semester long	10 marks	10%
6	Quizzes	Week 4. 8.12	5 marks	5%

6. Learning Resources and Supportive Facilities *

Learning resources (books, scientific references, etc.) *	**The main (essential) reference for the course**	Textbook of therapeutics, drugs and disease management. Helms R, Quan DJ, Herfindal ET(Ed), Williams and Wilkins, 8th Edition. Pharmacotherapy: A Pathophysiologic Approach, 11th Edition.
	Other References	**Lecture notes** on Geriatric Pharmacotherapy prepared by department of clinical pharmacy. **Practical notes** on Geriatric Pharmacotherapy prepared by department of clinical pharmacy.
	Electronic Sources	www.biomedcentral.com www.medscape.com http://www.sciencedirect.com/ http://www.ncbi.nlm.nih.gov/ http://www.FDA.gov
	Learning Platforms	https://lms3.kfs.edu.eg/pharm/login/index.php

	Other	Applied Therapeutics, The clinical Use of Drugs(2024) Koda-Kimble MA(Ed). Lippincott Williams and Wilkins, 12th Edition. Pharmacotherapy. DiPiro JT et al (Ed). McGraw Hill, 11th Edition (2020)
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	- Data show. - Computers. –Library. –Internet. -Interactive boards and distant learning unit
	Supplies	Classrooms. -Educational pharmacy
	Electronic Programs	**/https://www.mdcalc.com**
	Skill Labs/ Simulators	-Educational pharmacy

Course Plan

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

Course title: Geriatric Pharmacotherapy (Elective Course) **Course code:** PP E15

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	**Introduction to geriatrics pharmacotherapy**	1.1.1 , 1.1.2 , 1.1.3	Lectures, E-learning	Written, practical and oral exams
Week # 2	**Urinary incontinence**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2,	Lectures, E-learning, practical training and class activities	Written, practical and oral exams

		2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2,3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 3	**Benign prostatic hypertrophy**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2,3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams

Week # 4	**Osteoarthritis**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.1.7 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 5	**Osteoarthritis (cont.)**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.1.7 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6,	Lectures, E-learning, practical training and class activities	Written, practical and oral exams

		3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 6	**Rheumatoid arthritis**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.1.7 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 7	**Periodical exam**			
Week # 8	**Ager-related macular**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13,	Lectures, E-learning, practical training and class activities	Written, practical and oral exams

	degeneration and cataract	2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 9	**Gout and hyperuricemia**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.1.7 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3,	Lectures, E-learning, practical training and class activities	Written, practical and oral exams

		4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 10	**Osteoporosis**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.1.7 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 11	**Osteomalacia**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.1.7	Lectures, E-learning, practical training, seminars and class activities	Written, practical and oral exams

		3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 12	**Alzheimer disease**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures, E-learning, seminars and practical training	Written, practical and oral exams
Week # 13	**Fibromyalgia**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4,	Lectures and E-learning	Written, practical and oral exams

		2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.1.7 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 14	**Peripheral neuropathy**	1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2, , 3.1.4, 3.1.5, 3.1.6, 3.1.7 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3,	Lectures and E-learning	Written and oral exams

		4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4		
Week # 15	**Revision**	1.1.1,1.1.2,1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11. 1.1.12, 1.1.13, 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.2.1, 2.2.2, 2.4.1, 2.4.2, 2.4.3, 2.5.1, 25.2, 2.5.3, 3.1.1, 3.1.2,3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.1.7 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9, 3.2.10, 3.2.11, 3.2.12, 3.2.13 4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.3.1, 4.3.2, 4.3.3, 4.3.4	Lectures and E-learning	Written and oral exams

Name and Signature
Course Coordinator
Associate. Prof. Noha Mahmoud El-Khodary
Associate. Prof. Ahmed Amin Ali

Name and Signature
Program Coordinator
Associate. Prof. Ahmed Amin Ali