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

Clinical (Pharm-D) program

Course Specification

2025/2026

First Level

Second Semester

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Course Specification
(2025)

1. Basic Information

Course Title (according to the bylaw)	Pharmaceutical Analytical Chemistry II			
Course Code (according to the bylaw)	PA 202			
Department/s participating in delivery of the course	Department of Pharmaceutical Analytical Chemistry			
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	First level			
Academic Program	Bachelor in pharmacy (Pharm D clinical)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Dr. Galal Magdy			
Course Specification Approval Date	9/2025			
Course Specification Approval	Department council			

2. Course Overview (Brief summary of scientific content)

This course covers the scientific basis and pharmaceutical application of complexometric and redox titrations. In addition to the principles and the application of electrochemical analysis and polarography.

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 successful completion of this course, students will be able to integrate knowledge from basic inorganic and analytical chemistry to standardized materials. 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 the principles and applications of complexometric and redox titrations .
1.1.3	Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.	**1.1.2**	Understand the principles and applications of conductometric, potentiometric and polarographic methods of analysis.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-2- COMPETENCY		**Upon finishing this course, students will be able to apply the acquired knowledge to standardize some pharmaceutical materials.** **This competency will be developed via the following key elements:**	
2.2.1	Isolate, design, identify, synthesize, purify, analyze, and standardize	**2.2.1**	Demonstrate the principles of various analytical instruments used for the analysis of different pharmaceutical materials

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
	synthetic/natural pharmaceutical materials		
2.2.2	Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.	**2.2.2**	Use effectively appropriate titrimetric and electrochemical methods for laboratory analysis of selected inorganic and pharmaceutical materials.
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	**2.2.3**	Select and apply redox or electrochemical analytical methods to analyze pharmaceutical materials
		2.2.4	Explain the principles of pharmaceutical calculations and their applications to pharmaceutical
2-3- COMPETENCY		**Upon finishing this course, students will be able to handle and dispose chemical materials 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 synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical fields.	**2.3.1**	Handle chemical materials safely to avoid harm to individuals.
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of pharmaceutical materials/products.	**2.3.2**	Use laboratory reagents, glassware and equipment safely and appropriately
2-4- COMPETENCY		**Upon finishing this course, students will be able to properly and safely handle chemicals avoiding their harm**	

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
		This competency will be developed via the following key elements:	
2.4.1	Ensure safe handling/use of poisons to avoid their harm to individuals and communities	**2.4.1**	Select appropriate methods for handling and disposal of materials used in pharmaceutical analysis
2-5- COMPETENCY		**Upon finishing this course, students will be able to Contribute to pharmaceutical research studies and needed to authorize medicinal products.** **This competency will be developed via the following key elements:**	
2.5.1	Fulfill the requirements of the regulatory framework to authorize a medicinal product including quality, safety, and efficacy requirements	**2.5.1**	Perform analytical identification of analytes as raw material or in dosage forms as well as determination of their concentration in accordance to ethical research regulations.
		2.5.2	Evaluate pharmaceutical products for compliance with quality, safety, and efficacy standards.

3. Teaching and Learning Methods

1. Lectures
2. Practical
3. E-learning
4. Discussion
5. Brain storming
6. Assignment
7. Presentation
8. Case study

Course Schedule

Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)	Training (Practical /Clinical/ .....)	Self-learning (Tasks/ Assignments/ Projects/ ...)	Other (to be determined)
1	- Complex-Formation titration - Classification of chelating agents - Factors affecting the stability of complex ions	4	2	2	-	-
2	- EDTA titrations - Cyanometric titrations	4	2	2	-	-
3	Introduction to redox titration: - electrical properties of redox systems - Nernst equation for electrode potential - Factors affecting oxidation potential	4	2	2	-	-
4	- Redox titration curves - Detection of the end point in redox titrations - Permanganate titrations	4	2	2	-	-
5	- Potassium dichromate titrations - Cerium sulphate titrations	4	2	2	-	-
6	Iodine-iodide systems	4	2	2	-	-
7	**Semester works**					
8	Introduction to instrumental methods of analysis.	4	2	2	-	-
9	Electrochemical methods: potentiometry	4	2	2	-	-
10	Ion selective electrodes	4	2	2	-	-
11	Conductometry:	4	2	2	-	-

	-Metal vs. electrolytic conductors -Factors affecting chemical solutions' electrical conductance					
12	Analytical applications of conductometry	4	2	2	-	-
13	Voltammetry: introduction	4	2	2	-	-
14	Polarography	2	2	Practical exam	-	-
15	Analytical applications of polarography	2	2	Practical exam	-	-

4. Methods of students' assessment

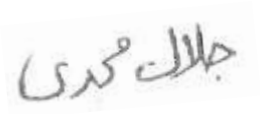
No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Exam 1written (Semester work)	**7**	**15**	**15%**
2	Final Written Exam	**16,17**	**50**	**50%**
3	Final Practical/Clinical/… Exam	**14,15**	**25**	**25%**
4	Final Oral Exam	**16,17**	**10**	**10%**

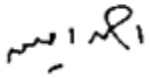
5. Learning Resources and Supportive Facilities *

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- CHRISTIAN, Gary D.; DASGUPTA, Purnendu K.; SCHUG, Kevin A. Analytical chemistry. John Wiley & Sons, 2013. 2-David S. Hage, James D. Carr "Analytical chemistry and Quantitative Analysis,"(2011). 3- Skoog, Douglas A. ;West, Donald M.; Holler, F. James; Crouch, Stanley R.(2014), "Fundamentals of analytical chemistry".belmot: books/Cole .
	Other References	-Notes on pharmaceutical analytical chemistry for pre-pharmacy students, prepared and distributed by Dept. of Pharmaceutical Analytical Chemistry.

		- Lab manual of pharmaceutical analytical chemistry for pre-pharmacy students, prepared and distributed by Dept. of Pharmaceutical Analytical Chemistry
	Electronic Sources (Links must be added)	www.pubmed.com www.sciencedirect.com
	Other (to be mentioned)	1-D. A. Skoog, D. M. west, F. J. holler and S. R. crouch, "fundamentals of analytical chemistry", eighth edition brooks / cole-thomson learning, inc. (2004).
Supportive facilities & equipment for teaching and learning	**Devices/Instruments**	Laboratory facilities (burettes, flasks, and reagents)
	Supplies	pH meter and conductometer
	Virtual Labs	Praxilabs
	Other (to be mentioned)	Data show, smart board, Unit for distance learning, Computers, Internet and Library.

Name and Signature **Course Coordinator** **Dr. Galal Magdy**	**Name and Signature** **Program Coordinator** **Prof. Dr. Ahmed Amin**





Course Specification
(2025)

1. Basic Information

Course Title (according to the bylaw)	Pharmaceutical Organic Chemistry II			
Course Code (according to the bylaw)	PC 202			
Department/s participating in delivery of the course	Pharmaceutical Chemistry Department			
Number of credit hours/points of the course (according to the bylaw)	Theoretical	Practical	Other (specify)	Total
	2	1	----	3
Course Type	compulsory			
Academic level at which the course is taught	First Level, Semester (2)			
Academic Program	Bachelor of Pharmacy (Pharm D.) (Clinical pharmacy)			
Faculty/Institute	Faculty of pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Associate Prof. Rofaida salem			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	Department council			

2. Course Overview (Brief summary of scientific content)

This course covers different classes of organic compounds such as aryl halides, alcohols, phenols, epoxides, aldehydes, ketones, carboxylic acids, and nitrogenous compounds.

3. Course Learning Outcomes CLOs

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

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		**Course Learning Outcomes** Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		**Upon completing this course, students will be able to integrate knowledge of organic chemistry by describing the structures, nomenclature, physical and chemical properties, and reactivity of major functional groups They will also be able to predict reaction mechanisms, design synthetic routes, and apply purification techniques for these compounds, thereby building a strong foundation for pharmaceutical and medicinal chemistry applications. 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**	Recall the structures, nomenclature, and properties of major organic functional groups.
		1.1.2	Describe the methods of preparation of different functional groups and their underlying reaction mechanisms and relate the mechanism to biochemical processes (e.g., esterification in lipid metabolism, oxidation–reduction in cellular respiration).

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
		1.1.3	Explain the relationship between the structure of functional groups and their chemical reactivity and the biomedical significance of common organic functional groups in biomolecules (e.g., alcohols in sugars, amines in amino acids, carboxylic acids in fatty acids).
		1.1.4	Analyze and predict the outcome of reactions involving different organic functional groups and the role of functional group transformations in drug metabolism and biotransformation pathways.
		1.1.5	Compare alternative synthetic routes for the preparation of a target organic compound.
		1.1.6	Interpret mechanistic pathways to rationalize observed reactivity and product formation
		1.1.7	Predict biological activity of molecules based on the presence and reactivity of specific functional groups.
		1.1.8	Recognize the ethical and social responsibilities of applying organic chemistry in pharmaceutical and healthcare contexts.
		1.1.9	Identify the societal impact of chemical and pharmaceutical products on health and environment.
		1.1.10	Explain how knowledge of functional groups contributes to standardization and quality control of raw materials and final 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**
		1.1.11	Analyze case studies where chemical properties of functional groups impact formulation stability and shelf life.
		1.1.12	Evaluate different administrative decisions related to safety, handling, and disposal of organic chemicals
1.1.3	**Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze and assure quality of synthetic/natural pharmaceutical materials/products.**	**1.1.1**	Recall the fundamental scientific principles underlying the properties and reactions of synthetic and natural pharmaceutical materials.
		1.1.2	Explain different approaches for the design and preparation of synthetic pharmaceutical compounds.
		1.1.3	Identify principles of quality assurance and control related to pharmaceutical raw materials and products.
		1.1.4	Evaluate the impact of functional groups and structural modifications on drug activity, stability, and quality.
		1.1.5	Work effectively in teams to complete laboratory and research tasks.
		1.1.6	Apply problem-solving and critical thinking skills in pharmaceutical contexts.
		1.1.7	Integrate fundamental sciences to propose solutions for problems in drug design and formulation.

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**
		1.1.8	Optimizing reaction conditions for efficient synthesis of active pharmaceutical ingredients (APIs).
		1.1.9	Perform laboratory procedures for handling, extraction, synthesis, and purification of pharmaceutical materials safely.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-2- COMPETENCY		**Upon completing this course, students will be able to apply principles of organic functional groups, their synthesis, reactions, and mechanisms in a professional and ethical manner to standardize pharmaceutical materials, support the preparation and quality assurance of pharmaceutical products, and contribute responsibly to safe practices in drug handling, storage, and distribution.** **This competency will be developed via the following key elements:**	
2.2.1	**Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/natural pharmaceutical materials.**	**2.2.1**	Predict the products of reactions involving different functional groups and rationalize them using mechanisms.
		2.2.2	Design synthetic routes for simple pharmaceutical molecules based on functional group transformations.
		2.2.3	Differentiate between synthetic and natural sources of pharmaceutical materials through structural and chemical evidence.

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**
		2.2.4	Understanding reaction mechanisms, stereochemistry, and functional group transformations.
		2.2.5	Perform laboratory procedures for isolation, synthesis, purification, and identification of organic compounds.
		2.2.6	Strategies for designing new drugs or analogs based on structure-activity relationships (SAR).
		2.2.7	Standardize organic pharmaceutical raw materials according to chemical reactivity and quality parameters.
		2.2.8	Apply analytical techniques (e.g., melting point, chromatography, spectroscopy) to confirm purity and identity of compounds.
		2.2.9	Techniques for purifying synthetic compounds (e.g., column chromatography, recrystallization). Methods for standardization and quality control (e.g., HPLC, TLC) to ensure consistency and efficacy in drug formulations.
2.2.2	**Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical**	**2.2.1**	Explain the principles of chemical stability and incompatibilities of organic functional groups in pharmaceutical products.
		2.2.2	Demonstrate responsibility and ethical practice in handling, storing, and reporting results of organic compounds.

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**
	materials/ products Considering various incompatibilities.	**2.2.3**	Communicate effectively about chemical incompatibilities and their relevance to pharmaceutical quality and safety.
		2.2.4	Predict possible chemical incompatibility between different functional groups in formulations.
		2.2.5	Evaluate the impact of organic reaction pathways on the stability, safety, and quality of pharmaceutical products.
		2.2.6	Integrate knowledge of functional group chemistry to suggest solutions for preventing or minimizing incompatibilities.
		2.2.7	Document laboratory work in accordance with good laboratory practice (GLP) and quality management requirements.
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.**	**2.2.1**	Demonstrate understanding of the fundamental principles underlying different synthetic methods (e.g., Friedel–Crafts acylation/alkylation, Grignard reactions, nucleophilic substitution) and their relevance to pharmaceutical chemistry applications.
		2.2.2	Develop proficiency in the safe and effective use of laboratory tools and instruments (e.g., rotary evaporator, distillation units, pH meters) required for organic synthesis, purification, and analysis.
		2.2.3	Apply spectroscopic techniques (UV–Vis, IR, NMR) to identify organic functional groups and

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**
			confirm the structure and purity of synthesized compounds.
		2.2.4	Employ chromatographic methods (TLC, GC, HPLC) for the separation, purification, and analysis of organic pharmaceutical mixtures.
2-3- COMPETENCY		**Upon completing this course, students will be able to handle and dispose synthetic/natural 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, biotechnology based and radio-labeled products, and other materials/products used in pharmaceutical Field.**	**2.3.1**	Recognize the chemical properties and hazards of organic compounds, synthetic/natural products, and radio-labeled derivatives used in pharmaceutical chemistry. Explain the scientific basis of safety guidelines for handling, storage, and disposal of chemical and biological materials. Distinguish between different categories of pharmaceutical materials (synthetic, natural, biotechnological, radio-labeled) based on structural and functional group characteristics. Evaluate potential risks and incompatibilities during laboratory experiments involving hazardous or sensitive organic compounds.

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**
			Propose safe handling and disposal strategies for organic and pharmaceutical waste, considering environmental and ethical aspects.
		2.3.2	Demonstrate correct procedures for labeling, storage, and safe disposal of organic reagents and pharmaceutical by-products. Apply laboratory safety protocols when working with volatile, corrosive, or radio-labeled organic compounds. Perform risk assessment before conducting laboratory experiments involving organic synthesis and pharmaceutical applications. Practice ethical and responsible behavior in handling and disposing laboratory chemicals and pharmaceutical materials. Communicate safety procedures and laboratory risks effectively to peers and team members. Collaborate in developing a safe and sustainable laboratory environment in compliance with institutional and national safety policies.
2.3.2	**Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.**	**2.3.1**	Recognize the ethical considerations in the synthesis and use of pharmaceutical products, particularly in the context of synthetic drugs, biologics, and biotechnology. Understand the legal framework governing the development, approval, and use of pharmaceuticals, including patents, regulatory

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**
			standards (e.g., FDA, EMA), and international guidelines (e.g., ICH, WHO).
		2.3.2	Follow safety protocols for laboratory work involving pharmaceutical chemicals, including handling toxic substances, chemicals with high reactivity, and radio-labeled compounds. Utilize personal protective equipment (PPE) and safety measures (e.g., biosafety cabinets) when working with bioactive, biologically derived, or radioactive pharmaceutical substances.
2-4- COMPETENCY		**Upon completing 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 organic substances 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**	Focus on the toxic properties of various organic compounds and their potential harmful effects on human health and the environment. Importance of dose-response relationships and how toxicity is determined.

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**
			Instruction on personal protective equipment (PPE) and appropriate safety measures in the laboratory, specifically for handling hazardous organic reagents.
		2.4.2	Understanding chemical waste disposal procedures to prevent contamination and harm to the environment.
			Proper labeling, storage, and transportation of chemicals to ensure safety.

4. Teaching and Learning Methods

1- **Lectures (√)**

2- **E-learning (√)**

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

4- **Discussion (√)**

5- **Seminars (√)**

6- **Assignments (√)**

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	Halogenated aromatic hydrocarbons	4	2	2	-----	-----
2	Alcohols	4	2	2	-----	-----
3	Alcohols (continued), ethers, epoxides & phenols.	4	2	2	-----	-----
4	Phenols (continued) & aromatic alcohols.	4	2	2	-----	-----
5	Aliphatic aldehydes & ketones	4	2	2	-----	-----
6	Aromatic aldehydes & ketones	4	2	2	-----	-----
7	Mid-term exam					
8	carboxylic acids	4	2	2	-----	-----
9	Carboxylic acid derivatives	4	2	2	-----	-----
10	Nitrogenous compounds: aromatic nitro compounds	4	2	2	-----	-----
11	Nitrogenous compounds: Aliphatic amines	4	2	2	-----	-----
12	Nitrogenous compounds: Aromatic amines	4	2	2	-----	-----
13	Nitrogenous compounds: Aromatic diazonium salts	4	2	2	-----	-----
14	Aryl halide & nucleophilic substitution	2	2	Practical exam	-----	-----
15	Aromatic sulphonic acids & their derivatives	2	2	Practical exam	-----	-----

5. Methods of students' assessment

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

5. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.)	**The main (essential) reference for the course**	Notes on Organic chemistry prepared and distributed by Dept. of Pharmaceutical Chemistry. Lab Manual of Organic chemistry prepared and distributed by Dept. of Pharmaceutical Chemistry. Volhardt K. P. C.; Schore, N. A. in organic chemistry (structure and function), 6th edition (2010) W. H. Freeman and company. NY. McMurry, J. in organic chemistry, 8th ed. (2011), Brooks/Cole, London. Solmon's T. W. G. in Organic Chemistry 10th ed. (2010), John Wiley and sons, Inc, NY. I. L. Finar Organic Chemistry Volume 1: The Fundamental Principles 5th edition, 1998, Longman Publishing Group. Clayden, Greeves, Warren and wothers Textbook of Organic Chemistry, Oxford University Press, 2001. Bruice, P. Y. in organic chemistry, 6th edition (2010), Pearson education int. NY.
	Other References	William Brown, Christopher Foote, Brent L.S Iverson, Textbook of Organic Chemistry, "4th edn.", Thomson Brooke/ Cole, 2005. Graham Solomons, Craig Fryhle, Textbook of Organic Chemistry, "7th edn.", John Wiley & Sons Inc., New York, 2000. I. L. Finar Organic Chemistry Volume 1: The Fundamental Principles 5th edition, 1998, Longman Publishing Group. Marc Loudon, Textbook of Organic Chemistry, "4th edn." Oxford University Press, New York, 2002.
	Electronic Sources	www.medscape.com

		http://www.sciencedirect.com/ https://pubmed.ncbi.nlm.nih.gov/
	Learning Platforms	https://lms3.kfs.edu.eg/pharm/login/index.php
	Other	
Supportive facilities & equipment for teaching and learning	**Devices/Instruments**	Data show, Computers, Library, Internet, Interactive boards and a distant learning unit
	Supplies	Classrooms.
	Skill Labs/ Simulators	----------

Course Plan

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

Course title: Pharmaceutical Organic Chemistry II **Course code:** PC 202

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	**Halogenated aromatic hydrocarbons**	1.1.1, 1.1.3, 1.1.4, 1.1.5, 2.2.1, 2.2.6, 2.2.8, 2.3.1,	Lectures, practical training and class activities	Written, practical and oral exams
Week # 2	**Alcohols**	1.1.1, 1.1.3, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.7, 2.3.1, 2.3.2, 2.3.3,	Lectures, practical training and class activities	Written, practical and oral exams
Week # 3	**Alcohols (continued), ethers, epoxides & phenols.**	1.1.1, 1.1.3, 1.1.6., 1.1.7, 1.1.8, 2.2.1, 2.2.2, 2.2.3, 2.2.8, 2.2.9, 2.2.10, 2.3.4,	Lectures, practical training and class activities	Written, practical and oral exams
Week # 4	**Phenols (continued) & aromatic alcohols.**	1.1.1, 1.1.2, 1.1.3, 1.1.5, 1.1.10, 1.1.11, 1.1.15, 2.2.1, 2.2.2, 2.2.3, 2.2.11, 2.2.12, 2.2.13, 2.2.14, 2.3.1, 2.3.5,	Lectures, practical training and class activities	Written, practical and oral exams
Week # 5	**Aliphatic aldehydes & ketones**	1.1.1, 1.1.3, 1.1.6, 1.1.9, 1.1.10, 2.2.1, 2.2.2, 2.2.3, 2.2.15, 2.2.16, 2.2.17, 2.3.2, 2.3.6, 2.3.7, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 6	**Aromatic aldehydes & ketones**	1.1.1, 1.1.3, 1.1.11, 1.1.12, 1.1.13, 1.1.14, 1.1.15, 2.2.2, 2.2.18, 2.2.19, 2.2.20, 2.3.1, 2.3.8, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 7	**Mid-term exam**			
Week # 8	**carboxylic acids**	1.1.1, 1.1.3, 1.1.4, 1.1.16, 1.1.17, 1.1.18, 1.1.19, 1.1.20, 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6, 2.2.7, 2.3.2, 2.3.3, 2.3.4, 2.3.7, 2.3.8, 2.3.11, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week 9	**Carboxylic acid derivatives**	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.6, 2.2.2, 2.2.3, 2.2.5, 2.2.10, 2.2.11, 2.2.15, 2.2.20, 2.3.2, 2.3.9, 2.3.10, 2.3.12, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 10	**Nitrogenous compounds: aromatic nitro compounds**	1.1.1, 1.1.3, 1.1.7, 1.1.8, 1.1.9, 2.2.1, 2.2.2, 2.2.3, 2.2.5, 2.2.8, 2.2.9, 2.3.1, 2.3.2.	Lectures, practical training and class activities	Written, practical and oral exams

Week # 11	**Nitrogenous compounds: Aliphatic amines**	1.1.1, 1.1.2, 1.1.3, 1.1.11, 1.1.12, 1.1.13, 1.1.15, 1.1.16, 2.2.1, 2.2.2., 2.2.3, 2.2.5, 2.3.1, 2.3.2.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 12	**Nitrogenous compounds: Aromatic amines**	1.1.1, 1.1.2, 1.1.3, 1.1.5, 1.1.8, 1.1.11, 1.1.13, 2.2.2, 2.2.5, 2.2.7, 2.2.10, 2.2.11, 2.2.18, 2.3.1, 2.3.2, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 13	**Nitrogenous compounds:** **Aromatic diazonium salts**	1.1.1, 1.1.3, 1.1.4, 1.1.9, 1.1.10, 1.1.11, 1.1.15, 2.2.3, 2.2.5, 2.2.9, 2.2.16, 2.2.17, 2.3.9, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 14	**Aryl halide & nucleophilic substitution**	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5, 1.1.7, 1.1.8, 1.1.10, 2.3.1, 2.3.2, 2.3.5, 2.3.6,	Lectures, practical training and class activities	Written and oral exams
Week # 15	**Aromatic sulphonic acids & their derivatives**	1.1.1, 1.1.3, 1.1.4, 1.1.5, 1.1.7, 1.1.9, 1.1.10, 1.1.11, 1.1.13, 1.1.15, 2.3.1, 2.3.2, 2.3.4, 2.3.5, 2.3.6, 2.4.1.	Lectures, practical training and class activities	Written and oral exams

Name and Signature
Course Coordinator

Associate Prof. Rofaida salem

Name and Signature
Program Coordinator

Ass. Prof. Ahmed Amin Ali

Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Cell Biology			
Course Code (according to the bylaw)	PB 201			
Department/s participating in delivery of the course	Biochemistry & Microbiology			
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	First Year-Second Term			
Academic Program	Pharm D-Clinical program			
Faculty/Institute	Pharmacy			
University/Academy	Kafrelsheikh			
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 value and responsible use of biology in society, the fundamental aspects of living systems, and the basic knowledge about biology, nature, and the function of different cells and organs.

It also covers the biomembranes and subcellular organization of prokaryotic and eukaryotic cells and the utilization of proper terms of cell biology, cell division, and cell cycle.

And it gives us an overview about the principles of molecular genetics, DNA and genetic code, transport of biomolecules across membranes, and the basics of Intercellular communication.

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 cell biology and molecular genetics, emphasizing the structure and function of living systems, responsible use of biological knowledge, and the molecular mechanisms that govern cellular processes and genetic information** **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 the value of biology in everyday life.
		1.1.2	Understand living organisms with focusing on the nature, structure, and function of cells, tissues, and organs.
		1.1.3	Discuss the principles of cell biology and molecular genetics, including DNA structure, the genetic code, cell division, and regulation of the cell cycle.
		1.1.4	Explore essential cellular processes such as membrane transport and intercellular communication to understand how cells interact and function in coordination.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
DOMAIN 3: PHARMACEUTICAL CARE 3-1- COMPETENCY		**Upon finishing this course, students will be able to apply the principles of body biochemistry to participate in improving care 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**	Apply the principles of cell biology and molecular genetics, including the basics of genomics, to understand body functions and the molecular basis of health and disease

4. Teaching and Learning Methods

1. Lectures (√)
2. Seminar / Workshop (√)
3. Class Activity (√)
4. 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	- Cell theory - Animal cell - Plant cell -Prokaryotic and -eukaryotic cells	2	2	-		
2	- Cytoplasm - Transport across membrane	2	2	-		
3	- Nucleus (Chromatin and chromosomes)	2	2	-		
4	- Endoplasmic reticulum - Golgi apparatus	2	2	-		
5	- Lysosomes - Chloroplasts - Mitochondria	2	2	-		
6	Biological significance of proteins	2	2	-		
7	**Mid-term exam**	2	2	-		
8	- Protein synthesis - Mutation points	2	2	-		
9	- Molecular genetics - DNA and RNA synthesis	2	2	-		
10	- Cell growth - Cell division (Mitotic)	2	2	-		
11	- Cell division (Meiosis) -Cell cycle regulation	2	2	-		
12	- Transport of biomolecules across membranes	2	2	-		
13	- Apoptosis - Apoptosis and its relation to cancer - Necrosis	2	2	-		
14	- Cellular energetics - Ions and voltages	2	2	-		
15	- Intercellular communication.	2	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	75	%75
3	Final Oral Exam	17th week	10	%10
4	Assignments / Project /Portfolio/ Logbook	3th week, 5th 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-Pollard, T. D., Earnshaw, W. C., Lippincott-Schwartz, J., & Johnson, G. T. (2023). *Cell Biology* (4th ed.). Elsevier. 2- Alberts, B., Hopkin, K., Johnson, A. D., Morgan, D. O., Raff, M., Roberts, K., & Walter, P. (2023). *Essential Cell Biology* (6th ed.). W. W. Norton & Company).
	Other References	Alberts,Bruce, Hopkin, Karen, Johnson, Alexander D.(2018): Essential Cell Biology: Fifth International Student Edition. Beate Brand-Saberi · (2020): Essential Current Concepts in Stem Cell Biology Bradury EM and Pongor S (1999): Structural Biology and Functional Genomics, Kluwer Academic Publishers, USA.
	Electronic Sources (Links must be added)	**http://www.freescience.info/Biology.php. www.highwire.com, www.google.com, www.pubmed.com & www.biomed.net http://www.emc.maricopa.edu/faculty/farabee/BIOBK/BioBookTOC.html**
	Learning Platforms (Links must be added)	**----**
	Other (to be mentioned)	**----**
Supportive facilities & equipment for teaching	**Devices/Instruments**	**---**
	Supplies	**---**
	Electronic Programs	**---**
	Skill Labs/ Simulators	**---**
	Virtual Labs	**---**

and learning *	**Other** (to be mentioned)	Class rooms - Internet -data show	- Computers -Library - Smart board

Course Plan

Week	Topic	Key Elements	Teaching & Learning Methods	Student Assessment Methods
1	- Cell theory - Animal cell - Plant cell -Prokaryotic and -eukaryotic cells	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written and oral exams
2	-Cytoplasm -Transport across membrane	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
3	- Nucleus (Chromatin and chromosomes)	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
4	- Endoplasmic reticulum - Golgi apparatus	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
5	- Lysosomes - Chloroplasts - Mitochondria	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
6	Biological significance of proteins	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
7	**Mid-term exam**			
8	- Protein synthesis - Mutation points	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
9	- Molecular genetics -DNA and RNA synthesis	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams

10	- Cell growth -Cell division (Mitotic)	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
11	- Cell division (Meiosis) -Cell cycle regulation	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
12	-Transport of biomolecules across membranes	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
13	- Apoptosis - Apoptosis and its relation to cancer - Necrosis	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
14	- Cellular energetics - Ions and voltages	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams
15	- Intercellular communication.	1.1.1, 1.1.2, 1.1.3, 1.1.4, 3.1.1	Lectures and class activities	Written, and oral exams

Name and Signature
Course Coordinator

Dr/ Shimaa Ali

Name and Signature
Program Coordinator

ا.م.د/ احمد امين

Kafrelsheikh University

Faculty of Pharmacy

جامعة كفر الشيخ

كلية الصيدلة

Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Anatomy& Histology			
Course Code (according to the bylaw)	MD 202			
Department/s participating in delivery of the course	Pharmacology and Toxicology department			
Number of credit hours/points of the course (according to the bylaw)	Theoretical	Practical	Other (specify)	Total
	2	1	----	3
Course Type	Compulsory			
Academic level at which the course is taught	first level, semester2			
Academic Program	Bachelor of Pharmacy (PharmD-clinical pharmacy)			
Faculty/Institute	Faculty of Pharmacy,			
University/Academy	Kafrelsheikh University.			
Name of Course Coordinator	Prof. Dr. Maha Abo Gazia. Assist. Prof. Dr. Rasha El sisi.			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	Department council			

2. Course Overview (Brief summary of scientific content)

This course covers general informations about cytology, different types of tissues including epithelial, connective tissue, muscular and nervous as well as histological structures of different systems. Identify the anatomical structure of different systems in the body including skeletal, muscular and articular systems as well as digestive, nervous, cardiovascular, respiratory and genitourinary systems. Practically identify the type of different tissues under microscope and the anatomical structure of different systems.

3. Course Learning Outcomes CLOs

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

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		**Course Learning Outcomes** Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		**Upon finishing this course, students will be able to integrate knowledge from basic information about pharmacology, Different categories of autonomic nervous system and cardiovascular system.** **This competency will be developed via the following key elements:**	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Recognize the anatomical structures of skeletal, muscular, and articular systems.
		1.1.2	Demonstrate practical skills in microscopic identification of various tissues and correlate their structure with function.
		1.1.3	Outline the anatomical relationships between different organs within each system to support understanding of body function.
		1.1.4	Identify the microscopic structure of cells and classify different tissue types, including epithelial, connective, muscular, and nervous tissues.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
		1.1.5	Describe the histological organization of major body systems such as digestive, nervous, cardiovascular, respiratory, and genitourinary systems.
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 basis of genomics in health and disease states to manage different diseases.	3.1.1	Correlate anatomical structures of major body systems with physiological processes and potential disease mechanisms.
		3.1.2	Describe cellular structures and their functions in relation to normal and diseased states.
		3.1.3	Differentiate between various tissue types (epithelial, connective, muscular, and nervous) and relate their structure to function and pathology.
		3.1.4	Identify histological features of body systems (skeletal, muscular, articular, digestive, nervous, cardiovascular, respiratory, and genitourinary) and their clinical relevance.

4. Teaching and Learning Methods

1. Lectures
2. E-learning
3. Practical training/ laboratory
4. Class activity
5. 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	Anatomical terminology, skeletal system	**4**	**2**	**2**		
2	Joint, Muscular system	**4**	**2**	**2**		
3	Respiratory system	**4**	**2**	**2**		
4	Cardiovascular system	**4**	**2**	**2**		
5	Digestive system	**4**	**2**	**2**		
6	Genitourinary system, Nervous system	**4**	**2**	**2**		
7	Semester work					
8	Essentials of Cytology	**4**	**2**	**2**		
9	Essentials of Epithelium	**4**	**2**	**2**		
10	Essentials of Connective tissue	**4**	**2**	**2**		
11	Essentials of histological structure of Blood &Vascular system.	**4**	**2**	**2**		
12	Essentials of histological structure of Muscle, Nervous and lymphatic tissues.	**4**	**2**	**2**		
13	Essentials of histological structure of Respiratory, Digestive and Endocrine systems.	**4**	**2**	**2**		
14	Revision	**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	Periodical exam	7th week	15	15
2	Final Practical/Clinical/… Exam	14th ,15th	25	25
3	Final Written Exam	16th ,17th	50	50
4	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)	-Gray, H., 2015. Gray's Anatomy: With original illustrations by Henry Carter. London, England: Arcturus publishing. Electron Microscopic Atlas of Mammalian Tissues (2001). H. Jastrow. Work shop Anatomy of the internet.
	Other References	Basic histology Text and Atlas (2010). Junqueira. L. C. 12 th edition.McGraw-Hill Companies, Inc. Atlas of histology (2004). Di Fiore.10 th edition.Lippincott Williams & Wilkins. Functional Histology (2005) .Wheater'sText & Atlas of Histology. 5 th edition. Churchill Livingstone.
	Electronic Sources (Links must be added)	www.biomedcentral.com -www.Pubmed.com -www.medscape.com
	Learning Platforms (Links must be added)	**https://lms3.kfs.edu.eg/pharm/login/index.php**
	Other (to be mentioned)	
Supportive	**Devices/Instruments**	-Data show

facilities & equipment for teaching and learning *		-Computers . - Internet
	Supplies	- Laboratory facilities (Microscope). - Lab notebooks.
	Electronic Programs	**----**
	Skill Labs/ Simulators	**----**
	Virtual Labs	**----**
	Other (to be mentioned)	Data show, smart board, Unit for distance learning, Computers, Internet and Library.

Course Plan

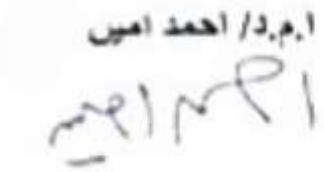
Matrix of course learning outcomes CLOs – Teaching and Learning Strategy and Student Assessment

Course title: Anatomy& Histology **Course code: MD 202**

Course Contents		**Key elements**	**Teaching and Learning Methods**	**Student Assessment Methods**
Week # 1	Anatomical terminology, skeletal system	1.1.1, 1.1.3, 3.1.1, 3.1.2	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 2	Joint, Muscular system	1.1.1, 1.1.3, 3.1.1, 3.1.2	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 3	Respiratory system	1.1.1, 1.1.3, 3.1.1, 3.1.2	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 4	Cardiovascular system	1.1.1, 1.1.3, 3.1.1, 3.1.2	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 5	Digestive system	1.1.1, 1.1.3, 3.1.1, 3.1.2	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 6	Genitourinary system, Nervous system	1.1.1, 1.1.3, 3.1.1, 3.1.2	Lectures, E-learning, practical training and	Written, practical and oral exams

			class activities	
Week # 7	Semester work			
Week # 8	Essentials of Cytology	1.1.2, 1.1.4, 1.1.5, 3.1.3, 3.1.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 9	Essentials of Epithelium	1.1.2, 1.1.4, 1.1.5, 3.1.3, 3.1.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 10	Essentials of Connective tissue	1.1.2, 1.1.4, 1.1.5, 3.1.3, 3.1.4	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 11	Essentials of histological structure of Blood &Vascular system.	1.1.2, 1.1.4, 1.1.5, 3.1.3, 3.1.4	Lectures, E-learning, practical training, seminars and class activities	Written, practical and oral exams
Week # 12	Essentials of histological structure of Muscle, Nervous and lymphatic tissues.	1.1.2, 1.1.4, 1.1.5, 3.1.3, 3.1.4	Lectures, E-learning, seminars and practical training	Written, practical and oral exams
Week # 13	Essentials of histological structure of Respiratory, Digestive and Endocrine systems.	1.1.2, 1.1.4, 1.1.5, 3.1.3, 3.1.4	Lectures and E-learning	Written, practical and oral exams
Week # 14	Revision	1.1.2, 1.1.4, 1.1.5, 3.1.3, 3.1.4	Lectures and E-learning	Written and oral exams
Week # 15	Revision	1.1.1, 1.1.3, 3.1.1, 3.1.2	Lectures and E-learning	Written and oral exams

Name and Signature Course Coordinator Prof. Dr. Maha Abo Gazia. Assist. Prof. Dr. Rasha El sisi.	Name and Signature Program Coordinator Prof. Dr. Ahmed Amin



Course Specification
(2025)

1. Basic Information

Course Title (according to the bylaw)	Physical pharmacy			
Course Code (according to the bylaw)	PT 202			
Department/s participating in delivery of the course	Pharmaceutics and Pharmaceutical Technology			
Number of credit hours/points of the course (according to the bylaw)	Theoretical	Practical	Other (specify)	Total
	2	1	----	3
Course Type	compulsory			
Academic level at which the course is taught	First level, Semester (2)			
Academic Program	Bachelor of pharmacy (Pharm D, clinical)			
Faculty/Institute	Faculty of pharmacy			
University/Academy	kafrelsheikh university			
Name of Course Coordinator	Ass. Prof. Eman Mazyad Lecturer/ Ahmed Adel			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council ….)	Department council			

2. Course Overview (Brief summary of scientific content)

This course provides students with knowledge of physicochemical principles essential for the design and formulation of pharmaceutical products. Students are introduced to the fundamental concepts of states of matter, Phase equilibrium, colligative properties, isotonicity solubility, dissolution, partition coefficient, surface and interfacial phenomena, surface active agents, adsorption and its application in pharmacy and rheological behavior of dosage forms.

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 identify different buffers, isotonic solutions, and complexes. Student will be able to differentiate between surface tension and interfacial tension and classify different types of rheological behavior of dosage forms. **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 different buffers, colloids, isotonic solutions and complexes clearly.
		1.1.2	Classify different types of flow.
		1.1.3	Discuss difference between the surface tension and interfacial tension phenomena.

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	Identify adsorption/desorption phenomena.
		1.1.5	Recognize solubilization methods and uses.
		1.1.6	Classify different reaction kinetics and drug degradation pathways.
1.1.3	Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.	**1.1.7**	Express knowledge of measuring surface tension, rheology and solubility
		1.1.8	List the factors affecting surface tension
		1.1.9	Discuss the factors affecting stability of dosage forms.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-2- COMPETENCY		Upon finishing this course, students will be able to calculate solubility, miscibility, partition coefficient, surface tension and rheology and graph the point of critical micelle concentration. **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**	Apply the principles for measuring the surface tension, rheology and solubility.
		2.2.2	Graph the point of critical micelle concentration.
		2.2.3	Test factors that affect miscibility.

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**
		2.2.4	Calculate partition coefficient.
		2.2.5	Examine the proper storage conditions based on drug degradation pathway.
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**	Recognize different methods and tools used in measuring surface tension, solubility of a substance and partition coefficient between immiscible liquids.
		2.2.7	Select suitable instrument for measuring viscosity.
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.	**2.2.8**	Recognize principles of pharmaceutical calculation for solubility, surface tension, viscosity, partition coefficient, buffer isotonisty.
2-3- COMPETENCY		Upon finishing this course, students will be able to handle and dispose synthetic/natural pharmaceutical Materials used in preparation of saturation solutions, solution with different concentrations of surfactant or glycerol effectively and safely with respect to relevant laws and legislations.	

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
		This competency will be developed via the following key elements:	
2.3.1	Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical fields.	**2.3.1**	Handle safely laboratory reagents to avoid their harm to individuals.
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	**2.3.2**	Recognize and adopt MSDS safety guidelines for safe and appropriate handling and disposal of pharmaceutical chemical materials.
Domain 4: Personal Practice **4-2- Competency**		Upon finishing this course, students will be able to Effectively communicate verbally, non-verbally and in writing with individuals and communities. **This competency will be developed via the following key elements:**	
4.2.2	Use contemporary technologies and media to demonstrate effective presentation skills.	**4.2.1**	Perform presentation on methods of measuring solubility, surface tension and viscosity.
		4.2.2	Appraise effective presentation skills in the modern technology and media to create engaging and memorable experiences. This includes using interactive slides, incorporating multimedia (videos, images,

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**
			audio), and employing tools for real-time feedback and collaboration. By integrating these elements, student can enhance audience engagement, clarify complex information, and leave a lasting impact.

4. Teaching and Learning Methods

1- **Lectures** (√)
2- **E-learning** (√)
3- **Practical training/ laboratory** (√)
4- **Assignment** (√)
5- **Seminars** (√)
6- **Brain storming and Discussion** (√)
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	Colloids, types, uses, preparation and characters.	**4**	**2**	**2**	--------	--------
2	Rheology, classification and use.	**4**	**2**	**2**	--------	--------
3	Types of flow and measurement of viscosity	**4**	**2**	**2**	--------	--------
4	Surface and interfacial tensions.	**4**	**2**	**2**	--------	--------
5	Adsorption at solid interface.	**4**	**2**	**2**	--------	--------
6	Adsorption at liquid interface.	**4**	**2**	**2**	--------	--------
7	**Periodical exam**		**2**	**2**		
8	Surface active agents.	**4**	**2**	**2**	--------	--------
9	Solubility phenomena.	**4**	**2**	**2**	--------	--------
10	Solubilization; methods and use.	**4**	**2**	**2**	--------	--------
11	Complexes; classification and use.	**4**	**2**	**2**	--------	--------
12	Kinetics of drug reactions.	**4**	**2**	**2**	--------	--------
13	Drug stability.	**4**	**2**	**2**	--------	--------

14	Buffer systems.	**4**	**2**	Practical exam	--------	--------
15	Isotonic solutions.	**4**	**2**	Practical exam	--------	--------

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Formative exam	3	Training	-----
2	Periodical exam	7	15	15%
3	Final Practical/Clinical/… Exam	14,15	15	15%
4	Final Written Exam	16,17	50	50%
5	Final Oral Exam	16,17	10	10%
6	Assignments / Project /Portfolio/ Logbook	11,12	10	10%

6. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.)	**The main (essential) reference for the course**	- Anshu K. S. Yadav and K. K. Bansal: Physical Pharmacy and Biopharmaceutics, 1st edition, PharmaMed Press, 2020. - Alexander T. Florence , David Attwood : Physicochemical principles of pharmacy, 5th edition, Pharmaceutical Press, 2016. - J. P. P. Sharma: Pharmaceutical Sciences: An Overview, 5th Edition, Nirali Prakashan 2024.
	Other References	Notes and Lab manual prepared by the department staff.
	Electronic Sources	www.pubmed.com www.sciencedirect.com

	(Links must be added)	
	Learning Platforms (Links must be added)	**https://lms3.kfs.edu.eg/pharm/login/index.php**
	Other (to be mentioned)	Alfred Martin: Physical Pharmacy: Principles and Applications, 4th edition, Lippincott Williams & Wilkins, 2018.
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Laboratory facilities and Equipment of factory.
	Supplies	Water bath, digital balances and other lab instruments
	Electronic Programs	----
	Skill Labs/ Simulators	----
	Virtual Labs	----
	Other (to be mentioned)	Data show, smart board, Unit for distance learning, Computers, Internet and Library.

Course Plan

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

Course title: Physical Pharmacy **Course code: PT 202**

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Colloids, types, uses, preparation and characters.	1.1.1, 2.2.1, 2.3.1.,2.3.2,4.2.1, 4.2.2	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 2	Rheology, classification and use.	1.1.2,1.1.7,2.2.2,2.2.3,2.2.9, 2.3.1, 2.3.2., 4.2.1,4.2.2	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 3	Types of flow and measurement of viscosity	1.1.2,1.1.7,2.2.2,2.2.3,2.2.9, 2.3.1, 2.3.2.,4.2.1	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 4	Surface and interfacial tensions.	1.1.3,1.1.7,1.1.8,2.2.2, 2.2.3, 2.2.4, 2.2.8, 2.2.10, 2.3.1, 2.3.2,4.2.1	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 5	Adsorption at solid interface.	1.1.3,1.1.4, 2.3.1,2.3.2, 4.2.2	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 6	Adsorption at liquid interface.	1.1.3,1.1.4, 2.3.1,2.3.2.,4.2.1	Lectures, E-learning, practical	Written, practical and oral exams

			training and class activities	
Week # 7	**Periodical exam**			
Week # 8	Surface active agents.	1.1.3,1.1.7,1.1.8,2.2.2, 2.2.3, 2.2.4, 2.2.8, 2.2.10, 2.3.1, 2.3.2	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 9	Solubility phenomena.	1.1.5, 1.1.7, 2.2.2, 2.2.5, 2.2.6, 2.2.10, 2.3.1,2.3.2.,4.2.1	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 10	Solubilization; methods and use.	1.1.5, 1.1.7, 2.2.2, 2.2.5, 2.2.6, 2.2.10, 2.3.1,2.3.2.	Lectures, E-learning, practical training and class activities	Written, practical and oral exams
Week # 11	Complexes; classification and use.	1.1.1,2.3.1,4.2.1, 4.2.2	Lectures, E-learning, practical training, seminars and class activities	Written, practical and oral exams
Week # 12	Kinetics of drug reactions.	1.1.6, 1.1.9, 2.2.7, 2.3.1,2.3.2., 4.2.1	Lectures, E-learning, seminars and practical training	Written, practical and oral exams
Week # 13	Drug stability.	1.1.6, 1.1.9, 2.2.7, 2.3.1,2.3.2, 4.2.2	Lectures and E-learning	Written, practical and oral exams
Week # 14	Buffer systems.	1.1.1,2.3.1,2.3.2, 4.22.	Lectures and E-learning	Written and oral exams
Week # 15	Isotonic solutions.	1.1.1,2.2.8, 2.2.10,2.3.1,2.3.2, 4.2.1	Lectures and E-learning	Written and oral exams

Name and Signature Course Coordinator Ass. Prof. Eman Mazyad Lecturer/ Ahmed Adel	Name and Signature Program Coordinator Ass. Prof. Ahmed Amin

Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Pharmacognosy I			
Course Code (according to the bylaw)	PG 202			
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			
Academic level at which the course is taught	First level, Semester (2)			
Academic Program	Bachelor in pharmacy (Pharm D) Clinical Pharmacy			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	ASS. Prof. Dr. Mai H. El-nagar Dr. Abdullah A. Elgazar			
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)

Drawing upon the rich Egyptian flora and other significant global florae, this course examines the wild and cultivated medicinal plants integral to the pharmaceutical, cosmetic, and food industries in both local and global markets. The curriculum introduces students to a range of botanical drugs derived from various plant parts, including leaves, flowers, seeds, bark, and wood. Through a combination of lectures and hands-on practical sessions, students will develop the essential skill of identifying these drugs in both their entire and powdered forms. The course further explores the major chemical constituents, traditional folk uses, and clinically proven applications of these plants, while also covering their benefits, necessary precautions, and potential herbal-drug interactions for selected examples.

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.**	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Describe the morphological and histological features of medicinal leaves, flowers, barks, wood, and seeds.
		1.1.2	Explain the botanical origin and taxonomy of crude plant drugs.
		1.1.3	Classify medicinal plant parts based on their structural and functional characteristics.
1.1.2		1.2.1	Apply correct botanical and pharmacognostic terminology when describing crude drugs.
		1.2.2	Interpret pharmacognostic descriptions and scientific names in reference materials.

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**
	Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	**1.2.3**	Use internationally accepted abbreviations for plant drugs and their constituents in academic and professional contexts
1.1.3	Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.	**1.3.1**	Identify authentic crude drugs and detect adulterants through morphological and histological examination
		1.3.2	Relate plant part structure to appropriate extraction and processing techniques.
		1.3.3	Evaluate the quality of crude drugs using pharmacognostic standards
1.1.4	Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate their appropriateness, effectiveness, and safety in individuals and populations.	**1.4.1**	Explain the relationship between active constituents in leaves, flowers, barks, wood, and seeds and their pharmacological effects
		1.4.2	Assess the therapeutic relevance of crude plant materials in traditional and modern medicine.
		1.4.3	Discuss safety concerns and toxicity issues related to plant-derived products.
1.1.5	Retrieve information from fundamental sciences to solve therapeutic problems.	**1.5.1**	Retrieve information from pharmacognosy references about plant drugs used for specific therapeutic purposes.
		1.5.2	Compare different plant sources for the same therapeutic indication to determine suitability.
		1.5.3	Select the most appropriate crude drug source based on quality and efficacy data
1.1.6	Utilize scientific literature and collect and interpret information to enhance professional decisions.	**1.6.1**	Search scientific literature for updated information on medicinal plant parts covered in the course.
		1.6.2	Summarize research findings related to pharmacognostic identification and active constituents
		1.6.3	Critically appraise literature data to support decisions in crude drug selection and use.

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	Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.	**1.7.1**	Identify recent trends in the cultivation and processing of medicinal plants.
		1.7.2	Analyze the impact of adulteration and substitution on therapeutic outcomes and public health.
		1.7.3	Evaluate global market challenges and opportunities for medicinal leaves, flowers, barks, wood, and seeds.
Domain 2: Professional and Ethical Practice		**2-Competency** **Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines**	
2.2.1	Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/natural pharmaceutical materials.	**2.1.1**	Identify and classify crude drugs based on their morphological and microscopic characters.
		2.1.2	select appropriate extraction and separation techniques based on the nature of the active constituents from natural sources.
		2.1.3	Apply qualitative chemical methods for analysis and standardization of herbal materials.
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**	Fulfil Good manufacture Practice (GMP) and safety guidelines during handling and storage of crude drugs and herbal preparations.
		2.2.2	Handle and dispose of natural products to avoid harm to individuals and the environment in compliance with environmental safety standards.
		2.2.3	Assess the quality of herbal materials considering potential adulteration and incompatibilities.
2.2.3	Recognize the principles of various tools and instruments and select the proper	**2.3.1**	Operate effectively microscopes and other relevant lab instruments.
		2.3.2	Select appropriate chemical tests for identification phytoconstituents.

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**
	techniques for synthesis and analysis of different materials and production of pharmaceuticals.	**2.3.3**	Demonstrate safe and efficient use of laboratory reagents and equipment in pharmacognostic experiments.
2.3.1	Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical fields.	**2.4.1**	Identify different natural and synthetic pharmaceutical materials using macroscopic and microscopic techniques.
		2.4.2	Handle and operate laboratory tools (e.g., microscopes, grinders, extractors) safely according to GLP requirements.
		2.4.3	Dispose laboratory waste, including plant residues and solvents, using approved disposal protocols.
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	**2.5.1**	Recognize national and institutional safety guidelines for handling natural products in the lab.
		2.5.3	Demonstrate safe practices that minimize risks to individuals and the environment during laboratory work.
2.4.1	Ensure safe handling/use of poisons to avoid their harm to individuals and communities.	**2.6.1**	Demonstrate safe handling techniques of natural poisons
		2.6.2	Apply appropriate disposal methods for toxic plant materials and extracts.
		2.6.3	Identify hazards related to natural toxins and implement preventive measures in examination and storage.
2.4.3	Take actions to solve any identified medicine-related and pharmaceutical care problems.	**2.7.1**	Analyze potential medicine-related problems arising from natural products and propose corrective actions.
		2.7.2	Evaluate medicinal plant materials for quality and safety to prevent toxic exposures.
		2.7.3	Collaborate in developing protocols for safe dispensing and storage of medicinal plants to minimize risks.
2.5.2		**2.8.1**	Retrieve and systematically gather up-to-date, evidence-based information relevant 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**
	Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession		natural products and their pharmacognostic evaluation.
		2.8.2	Interpret scientific data and research findings critically to assess the quality, safety, and efficacy of medicinal plants and natural materials.
		2.8.3	Apply ethical and professional standards in handling, disposing, standardizing, and managing natural products within pharmaceutical practice.
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**.	
3.2.1	Integrate the pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, adverse drug reactions and drug interactions.	3.1.1	Describe the mechanisms of action and therapeutic uses of medicinal plants.
		3.1.2	Identify dosage forms, contraindications, and adverse reactions of selected medicinal plants.
		3.1.3	Explain drug interactions between medicinal plants and conventional drugs.
3.2.3	Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.	3.2.4	Counsel patients and community on appropriate use of medicinal plants and nutraceuticals.
		3.2.2	Educate on evidence-based benefits and limitations associated with medicinal plants.
3.2.4	Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.	3.3.1	Identify toxic constituents and symptoms of poisoning from medicinal plants.
		3.3.2	Advise on prevention and management of herbal toxicities.
		3.3.3	Provide community education on safe handling and storage of medicinal plants.
Domain 4: Personal Practice		**4-2-Competency** **Effectively communicate verbally, non-verbally and .in writing with individuals and communities**	
4.2.1		4.1.1	Present and simplify a WHO monograph for a selected medicinal plant using data-show

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**
	Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care teams, patients, and communities.		technology in an engaging and scientific manner.
		4.1.2	Write clear and concise reports summarizing the pharmacognostic characteristics of medicinal plants tailored for healthcare professionals.
		4.1.3	Demonstrate effective verbal communication by leading group discussions on the ethnopharmacological uses of plants within a healthcare team setting.

4. Teaching and Learning Methods

1- Lectures
2- Practical training / laboratory
3- Seminar / Workshop
4- Class Activity
5- Discussion
6- Brain storming

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 introduction for Botanical monographs and Pharmacognosy resources	**4**	**2**	**2**		
2	Study, evaluation and critical analysis of WHO monographs for selected medicinal leaves - 1	**4**	**2**	**2**		
3	Study, evaluation and critical analysis of WHO monographs for selected medicinal leaves - 2	**4**	**2**	**2**		
4	Introduction for the medicinal Barks and wood Study, evaluation and critical analysis of WHO monographs for selected medicinal barks	**4**	**2**	**2**		
5	Critical analysis of WHO monographs for selected medicinal barks-1	**2**	**2**	Practical exam		
6	Critical analysis of WHO monographs for selected medicinal barks-2	**4**	**2**	**2**		
7	Critical analysis of WHO monographs for selected medicinal Wood	**4**	**2**	**2**		
8	Introduction for the medicinal flower Study, evaluation and critical analysis of WHO	**4**	**2**	**2**		

	monographs for selected medicinal flower-1					
9	Study, evaluation and critical analysis of WHO monographs for selected medicinal Flower -2	**4**	**2**	**2**		
10	Study, evaluation and critical analysis of WHO monographs for selected medicinal Flower -3	**2**	**2**	Practical exam		
11	Introduction to medicinal seed	**4**	**2**	**2**		
12	Study, evaluation and critical analysis of WHO monographs for selected medicinal seed -1	**4**	**2**	**2**		
13	Study, evaluation and critical analysis of WHO monographs for selected medicinal seed -2	**4**	**2**	**2**		
14	Scientific research in the field of Pharmacognosy	**4**	**2**	**2**		
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	Assignments	3,7,11	15	15 %
2	Practical exam	5, 10,15	25	25 %
3	Final exam	16, 17	50	50 %
4	Oral exam	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. Badal McCreath, S., & Clement, Y. N. (Eds.). (2023). *Pharmacognosy: Fundamentals, applications and strategies* (2nd ed.). Academic Press. https://doi.org/10.1016/C2020-0-01935-8 2. Odoh, U. E. (2025). *Pharmacognosy and phytochemistry: Principles, techniques, and clinical applications*. Wiley. https://www.readings.com.au/product/9781394203659 3. World Health Organization. (2010). WHO monographs on medicinal plants commonly used in the Newly Independent States (NIS). WHO Press. https://apps.who.int/iris/handle/10665/42052 4. Wallis, T. E. (2018). Textbook of pharmacognosy (5th ed.). CBS Publishers & Distributors.
	Other References	Notes and Lab manual prepared by the department staff
	Electronic Sources (Links must be added)	websites https://apps.who.int/medicinedocs/en/m/abstract/Js14213e/ www.biomedcentral.com www.medscape.com http://www.sciencedirect.com/ http://www.ncbi.nlm.nih.gov/
	Learning Platforms	**https://lms3.kfs.edu.eg/pharm/login/index.php**
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	-Laboratory facilities (Microscopes, flames)
	Supplies	
	Electronic Programs	
	Skill Labs/ Simulators	
	Virtual Labs	
	Other (to be mentioned)	Data show - Computers.

		–Library -Class room. – Medicinal plants Farm

Name and Signature **Course Coordinator**		**Name and Signature** **Program Coordinator**

Course Specification

1. Basic Information

Course Title (according to the bylaw)	Psychology			
Course Code (according to the bylaw)	MD 203			
Department/s participating in delivery of the course	Pharmacognosy department			
Number of credit hours/points of the course (according to the bylaw)	**Theoretical**	**Practical**	Other (specify)	**Total**
	1	**-**		**-**
Course Type	compulsory			
Academic level at which the course is taught	First level, semester 2			
Academic Program	Bachelor of Pharmacy (Pharm D.) Clinical Pharmacy			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelshiekh			
Name of Course Coordinator	Dr. Amal Belal			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council ….)	Department council			
Prerequisite	Registration			

2. Course Overview (Brief summary of scientific content)

The course introduces different principles, theories and vocabulary of psychology as a science. The course also aims to provide students with basic concepts of social psychology, medical sociology and interpersonal communication which relate to the pharmacy practice system that involves patients, pharmacists, physicians, nurses and other health care professionals.

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 fundamental psychological principles, social psychology concepts, and medical sociology perspectives to enhance communication, patient counseling, and professional behavior in pharmacy practice.** **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	Explain the fundamental concepts, principles, and theories of psychology relevant to healthcare and pharmacy practice.
		1.1.2	Analyze social psychology and medical sociology factors that influence health, illness, and patient behavior.
		1.1.3	Apply effective interpersonal communication strategies in pharmacist–patient and healthcare team interactions
		1.1.4	Describe the role and methods of psychological counseling in pharmacy to improve patient 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**
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE **2-1- COMPETENCY**		**Upon finishing this course, students will be able to collaborate effectively within inter-professional healthcare teams by applying psychological principles, social and behavioral sciences, and communication skills to enhance patient well-being, uphold patients' rights, and contribute to the quality of life of individuals and communities.** **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**	Identify psychological and social factors that may require referral to other healthcare professionals for specialized care.
		2.1.2	Demonstrate awareness of personal and professional boundaries when applying psychological principles and counseling in pharmacy practice.
		2.1.3	Apply effective communication skills when collaborating with other members of the healthcare team to ensure appropriate patient referral.
		2.1.4	Respect patients' rights, confidentiality, and autonomy during the referral or guidance process.
Domain 4: Personal Practice **4-1- Competency**		**Upon finishing this course, students will be able to Apply psychological principles and social science concepts to demonstrate leadership, effective time management, critical thinking, problem-solving, and both independent and team working skills, while fostering creativity and entrepreneurial approaches in healthcare and pharmacy practice. 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**
4.1.1	Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.	4.1.1	Apply principles of social psychology and medical sociology to promote effective collaboration and mutual respect within healthcare teams
		4.1.2	Conduct constructive peer evaluations using psychological and communication skills to enhance team performance.
		4.1.3	Demonstrate effective time management when engaging in counseling, patient education, and inter-professional activities.
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 interpret psychological and sociological information to address patient needs and healthcare challenges.
		4.1.5	Critically analyze patient behaviors and social influences to develop appropriate problem-solving strategies.
		4.1.6	Work both independently and collaboratively to apply psychological counseling and communication techniques in pharmacy practice
4-2- Competency		**Upon finishing this course, students will be able to Apply psychological principles, social psychology concepts, and counseling skills to communicate effectively—verbally, non-verbally, and in writing—with individuals, groups, and communities to promote health and well-being. 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	Apply principles of interpersonal communication and social psychology to build trust and rapport with patients, healthcare team members, and community groups.
		4.2.2	Demonstrate appropriate non-verbal communication techniques informed by psychological understanding of human behavior.

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	Use written communication effectively in patient education and health promotion, integrating psychological and sociological insights
4-3- Competency		**Upon finishing this course, students will be able to demonstrate self-awareness through reflection on psychological principles and interpersonal experiences, and engage in life-long learning to continuously enhance professional skills in patient care, communication, and counseling. 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 personal attitudes, behaviors, and communication styles using psychological concepts to identify strengths and areas for improvement.
		4.3.2	Evaluate interpersonal and teamwork performance based on social psychology and counseling principles to enhance professional practice.
		4.3.3	Set personal and professional development goals informed by medical sociology and behavioral science to improve patient care and community engagement.

4. Teaching and Learning Methods

1- Lectures

2- E-learning

3- Discussion

4- Brain storming

5- 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	Definition, Scope, and Branches of Psychology	1	1	-		
2	The Role of Psychology in Healthcare and Pharmacy Practice	1	1	-		

3	Core Principles of Human Behavior and Mental Processes	**1**	**1**	**-**		
4	Behavioral Theories and Applications in Patient Care	**1**	**1**	**-**		
5	Cognitive, Humanistic, and Psychoanalytic Approaches in Healthcare	**1**	**1**	**-**		
6	Social Influence and Health Behavior Change	**1**	**1**	**-**		
7	**Periodical exam**			**-**		
8	Group Behavior, Team Dynamics, and Collaboration in Healthcare	**1**	**1**	**-**		
9	Attitudes, Beliefs, and Their Effects on Patient Interaction	**1**	**1**	**-**		
10	Sociological Perspectives on Health and Illness	**1**	**1**	**-**		
11	Social Determinants of Health and Health Inequalities	**1**	**1**	**-**		
12	Cultural and Societal Influences on Health Behavior	**1**	**1**	**-**		
13	Verbal and Non-Verbal Communication Skills for Healthcare Professionals	**1**	**1**	**-**		
14	Fundamentals of Psychological Counseling in Pharmacy Practice	**1**	**1**	**-**		
15	Ethical and Professional Aspects of Patient Counseling	**1**	**1**	**-**		

5. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Exam 1written (formative exam)	6	--	
2	Periodical exam	7	15	15
3	Final Written Exam	16	85	85

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)	مذاكرات المقرر الكتب الدراسية علم النفس
	Other References	-
	Electronic Sources (Links must be added)	مجلات دورية، مواقع انترنت، الخ مجلات علم النفس
	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)	Data show, smart board, Unit for distance learning, Computers, Internet and Library

Name and Signature Course Coordinator	Name and Signature Program Coordinator