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

First Semester

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Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Pharmaceutical Analytical Chemistry I			
Course Code (according to the bylaw)	PA 101			
Department/s participating in delivery of the course	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	Level (1)			
Academic Program	Bachelor in pharmacy (Pharm D-Clinical)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Dr. Galal Magdy Mostafa			
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)

In this course, the students should be able to understand different chemical compounds such as acids and bases and various quantitative analytical techniques including titration reactions (in aqueous and non-aqueous media), precipitation reactions.

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**		**Graduates will be able to integrate knowledge from basic analytical techniques to identify as well as quantify different active pharmaceutical ingredients either authentic or in different pharmaceutical formulations in addition to biological samples.** **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 fundamentals of analytical chemistry: ionization theory, concepts of acids and bases.
		1.1.2	Discuss classical methods of analysis (titrimetry): types of reactions in titrimetry.
1.1.3	Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.	1.1.3	Explain acid base titrations in aqueous and non-aqueous media.
		1.1.4	Explain precipitate formation titration (Mohr, Fajan and Volhard methods).
		1.1.5	Interpret equilibrium problems e.g. calculation of pH of strong and weak acids, strong and weak bases, different salts, etc.
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:**	

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**
2.2.1	Isolate, Design, synthesize, purify, analyze, and standardize synthetic/natural pharmaceutical materials.	2.2.1	Use effectively appropriate titrimetric methods for analysis of some 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	Handle chemical materials safely to avoid their harm to individuals.
		2.2.3	Use laboratory reagents, glassware and equipment safely and appropriately.
		2.2.4	Apply pharmacopeial and modern analytical methods for qualitative and quantitative drug analysis.
		2.2.5	Select the appropriate titration method based on chemical properties of analyte.
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	Explain the theoretical basis of volumetric analysis.
		2.2.7	Provide skills for performing different titration types according to pharmacopeial standards.
		2.2.8	Relate analytical results to quality specifications of drugs and raw materials.
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 biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical fields.	2.3.1	Mention the fundamentals of titrations, as well as calculation of the basic statistical parameters and explain the application of these principles in the pharmaceutical analysis of drug substances.
		2.3.2	Mention the suitable method for analysis of drug substances depending on basic understanding of physic-chemical properties of the chemical compounds.
		2.3.3	Assess and interpret the possible interactions or interferences of some compounds with the selected method of analysis of certain compounds depending on the studied principles.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	2.3.4	Handle properly the chemical compounds in the laboratory and be aware of the rules of good laboratory and storage practice to minimize the errors of an applied analytical method.
		2.3.5	Application of the bases of precipitation titrations in the pharmaceutical analysis of drug
2.4. Competency		**Upon finishing this course, students will be able to express leadership, time management, critical thinking, problem solving, independent and team working skills. 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	Handle and dispose chemicals safely
		2.4.2	Illustrate the use of the studied reactions in the pharmaceutical assay.
2.5. Competency		**Ensure that the student has the skills to select the suitable method of analysis for analyte substances in pure form or in mixtures using the studied reactions and interpret the results. 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 neutralization, preciptimetric, and gravimetric titration assay for determination of some compounds.
		2.5.2	Propose appropriate strategy for analysis of mixtures of selected analytes.

4. Teaching and Learning Methods

1. Lectures
2. Practical training / laboratory
3. E-Learning
4. Class Activity
5. Discussion
6. Brain storming

7. Assignment
8. Presentation
9. Case study
10. virtual lab

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/	Other (to be determined)
1	Chemical kinetics, rate of reaction, rate law, first order reaction.	4	2	2	-	-
2	Second order and third order reactions, molecularity.	4	2	2	-	-
3	Activation energy and catalysis, photochemistry, absorbed energy and quantum yield.	4	2	2	-	-
4	- Introduction to qualitative and quantitative analysis. - Concepts of acids &bases - Ionization theory (pH, pOH, pK_w, etc.)	4	2	2	-	-
5	- Calculation of pH of aqueous solutions of acids, bases or salts of different strength i.e. pK_a. - Buffer systems	4	2	2	-	-
6	- Titrimetry: standard solutions and methods of expressing concentration. - Principle and types of titrimetric reactions	4	2	2	-	-
7	**Periodical exam**					

8	- Acid-Base titration in aqueous medium - Acid –Base indicators - Acid-Base titration curves	4	2	2	-	-
9	Application of acid –base titration in aqueous medium	4	2	2	-	-
10	- Acid-Base titration in Non-aqueous media - Types of non-aqueous solvents - Titration of weak acid & base - Indicators to detect end points	4	2	2	-	-
11	Application of acid-base titration in non-aqueous media	4	2	2	-	-
12	Precipitation titrations: Factors affecting solubility and solubility product constant.	4	2	2	-	-
13	Titration curves of precipitation titration and argentometric methods.	4	2	2	-	-
14	Mohr and Volhard methods	2	2	Practical exam	-	-
15	Fajan method	2	2	Practical exam	-	-

1. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1.	Periodical exam	Week7	15	15%
2.	Final written exam	Week 16,17	50	50%
3.	Final practical exam	Week14,15	20	20%
4.	Final oral exam	Week 16,17	10	10%
5.	Assignments / Project /Portfolio/ Logbook	Week 9	5	5 %

2. 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)	CHRISTIAN, Gary D.; DASGUPTA, Purnendu K.; SCHUG, Kevin A. Analytical chemistry. John Wiley & Sons, 2013. Gary D. Christian, "analytical chemistry", John Wiley& sons, INC (1994). 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).
	Other References	-David S. Hage, James D. Carr "Analytical chemistry and Quantitative Analysis,"(2011). - Skoog, Douglas A. ;West, Donald M.; Holler, F. James; Crouch, Stanley R.(2014), "Fundamentals of analytical chemistry".belmot: books/Cole. - R. A. Day, Jr and A. L. underwood, "quantitative analysis ",6th edition, prentice-hall international inc. (1991). - Dash, Dhruba Charan "Analytical Chemistry", second edition (2011). -Vogel's "Quantitative Inorganic Analysis" , 7 th edition, Longman Singapore (Pte) Ltd (1996).
	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 like pH meters, UV/Vis spectrophotometer, and HPLC
	Supplies	Chemicals as reagents and indicators for proper lab work and analytical tools as burettes, pipettes, stands, funnels, and flasks.
	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

Week	Topic	Key Elements	Teaching & Learning Methods	Student Assessment Methods
1	Chemical kinetics, rate of reaction, rate law, first order reaction.	1.1.1,1.1.2,1.1.3	Lecture, brain storming and discussion	Written and oral exams
2	Second order and third order reactions, molecularity.	1.1.1,1.1.2,1.1.3,1.1.4,2.2.5	Lecture, practical training, brain storming and discussion	Written, practical and oral exams
3	Activation energy and catalysis, photochemistry, absorbed energy and quantum yield.	1.1.3,1.1.4,1.1.5,2.2.5,2.3.1,2.3.2	Lecture and practical training	Written, practical and oral exams
4	- Introduction to qualitative and quantitative analysis. - Concepts of acids &bases - Ionization theory (pH, pOH, pK_w, etc.)	1.1.3,2.3.5,1.1.5,2.2.2,2.2.1,2.2.8,2.2.7, 2.2.4	Lectures and practical training	Written, practical and oral exams
5	- Calculation of pH of aqueous solutions of acids, bases or salts of different strength i.e. pK_a. - Buffer systems	1.1.3,2.2.1,2.2.2,2.2.3,2.2.4,2.2.5, 2.2.6,2.2.7	Lectures and practical training	Written, practical and oral exams
6	- Titrimetry: standard solutions and methods of expressing concentration. - Principle and types of titrimetric reactions	1.1.3,2.2.8,2.3.2,2.3.3,2.4.2,2.4.1,2.2.1, 2.2.2	Lectures and practical training	Written, practical and oral exams
7	**Periodical exam**			
8	- Acid-Base titration in aqueous	1.1.4,1.1.1,2.2.5,2.2.2,2.2	Lectures and	Written,

	medium - Acid –Base indicators - Acid-Base titration curves	.1,2.2.8,2.3.4, 2.4.2	practical training	practical and oral exams
9	Application of acid –base titration in aqueous medium	1.1.4,1.1.1,2.2.5,2.2.2,2.2 .1,2.2.8,2.3.4, 2.4.2	Lectures and practical training	Written, practical and oral exams
10	- Acid-Base titration in Non-aqueous media - Types of non-aqueous solvents - Titration of weak acid & base - Indicators to detect end points	1.1.4,2.2.7,2.3.1,2.2.2,2.2 .1,2.3.2, 2.5.1,2.5.2,2.4.2	Lectures and practical training	Written, practical and oral exams
11	Application of acid-base titration in non-aqueous media	1.1.4,2.2.7,2.3.1,2.2.2,2.2 .1,2.3.2, 2.5.1,2.5.2,2.4.2	Lectures and practical training	Written, practical and oral exams
12	Precipitation titrations: Factors affecting solubility and solubility product constant.	2.2.2,1.1.5,2.2.8,2.3.5,1.1 .1,2.5.1	Lectures and practical training	Written, practical and oral exams
13	Titration curves of precipitation titration and argentometric methods.	2.2.2,2.2.1,1.1.5,2.5.1,2.3 .5	Lectures and practical training	Written, practical and oral exams
14	Mohr and Volhard methods	2.2.5,1.1.5	Lecture	Written, practical and oral exams
15	Fajan method	2.2.5,2.2.1,1.1.1	Lecture	Written, practical and oral exams

Name and Signature
Course Coordinator

Dr. Galal Magdy Mostafa

Name and Signature
Program Coordinator

Prof. Dr. Ahmed Amin

Course Specification
(2025)

1. Basic Information

Course Title (according to the bylaw)	Pharmaceutical Organic Chemistry I			
Course Code (according to the bylaw)	PC101			
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 (1)			
Academic Program	Bachelor of Pharmacy (Pharm D.) (Clinical Pharmacy)			
Faculty/Institute	Faculty of pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Associate Prof Rofida Salem			
Course Specification Approval Date	9/2025			
Course Specification Approval (Attach the decision/minutes of the department /committee/council ....)	Department council			

1. Course Overview (Brief summary of scientific content)

This course covers the basic theories and principles of pharmaceutical organic chemistry which include electronic structure of atom, hybridization and theories of acids and bases, the chemistry and basics of stereochemistry, the chemistry of alkanes, cycloalkanes, alkenes, alkadienes, alkynes and alkyl halides, the chemistry of Arenes and aromatic compounds (aromaticity, anti-aromaticity, and chemical behavior of aromatic compounds) and Purification and identification of various organic compounds.

2. 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 completion of 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, and organic chemistry sciences.**	**1.1.1**	Explain the chemical and physicochemical properties of pharmaceutical agents in relation to their pharmacological and therapeutic applications.
		1.1.2	Define fundamental concepts, nomenclature, and physical properties of organic compounds and classify organic compounds based on their functional groups and structural features
		1.1.3	Describe the structural, electronic, and mechanistic basis of organic reactions that underline the synthesis and transformation of bioactive molecules.
		1.1.4	Recognize the role of organic chemistry as a fundamental science supporting pharmaceutical, biomedical, and clinical

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 through the understanding and development of drug molecules.
		1.1.5	Apply the principles of organic chemistry to the synthesis, purification, and structural identification of organic compounds relevant to pharmaceuticals.
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**	Illustrate reaction mechanisms using proper chemical structures and electron movement, Predict the products of organic reactions under specified
		1.1.2	Select and implement appropriate organic and analytical methods for the purification, characterization, and quality assessment of materials and organic compounds.
		1.1.3	Correlate molecular structure with physicochemical and biological properties to guide drug design, formulation, and stability testing.
		1.1.4	Apply principles of stereochemistry and conformational analysis to explain reactivity and selectivity
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, participate in systems for dispensing, storage, and distribution of medicines and practice professional and ethical standards in the laboratory through the safe synthesis, analysis, and documentation of organic compounds with pharmaceutical relevance. 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**	Apply synthetic organic chemistry principles to design and synthesize novel drug molecules and active pharmaceutical ingredients (APIs).
		2.2.2	Perform purification and isolation of bioactive compounds from synthetic or natural sources using chromatographic and crystallization techniques.
		2.2.3	Conduct qualitative and quantitative analysis of organic compounds and evaluate their

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**
			purity and properties using standard organic chemistry techniques and according to pharmacopeial guidelines.
2.2.2	**Apply the basic requirements of quality management system in developing, synthesis, analyzing, storing, and distributing organic and pharmaceutical materials/ products considering various incompatibilities.**	**2.2.1**	Implement quality control procedures during synthesis and formulation to ensure compliance with pharmacopeial and Good Manufacturing Practice (GMP) standards.
		2.2.2	Evaluate and manage physicochemical and chemical incompatibilities among organic compounds and reaction conditions.
		2.2.3	Apply documentation, validation, and stability testing procedures in the storage and handling of organic compounds and laboratory products.
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**	Identify the operational principles of spectroscopy, chromatography, and thermal analysis techniques used in organic chemistry synthesis, purification and characterization
		2.2.2	Select appropriate synthetic and analytical tools for the preparation, characterization, and quality assessment of pharmaceuticals.
		2.2.3	Apply modern instrumental techniques to optimize reaction conditions and monitor the purity and stability of drug substances.
2-3- COMPETENCY		**Upon completion of this course, students will be able to handle and dispose of organic compounds and laboratory chemicals safely and effectively, in compliance with relevant safety rules and regulations.** **This competency will be developed via the following key elements**	
2.3.1	**Handle, identify, and dispose synthetic/natural materials, and radio-labeled products, and other materials/products used in organic and pharmaceutical fields.**	**2.3.1**	Perform safe handling and identification of pharmaceutical raw materials (synthetic and natural), including reagents, intermediates, and final products used in drug synthesis.
		2.3.2	Apply appropriate techniques for handling and disposal of hazardous chemical substances such as organic solvents, reactive

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**
			intermediates, and corrosive reagents used in medicinal chemistry labs.
		2.3.3	Manage proper storage, labeling, and disposal of controlled or potentially toxic organic/pharmaceutical substances according to chemical safety protocols.
2.3.2	**Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of organic, and pharmaceutical materials/products.**	**2.3.1**	Recognize ethical responsibilities in chemical research including avoidance of environmental contamination, safe experimentation, and responsible reporting of results.
		2.3.2	Comply with legal and regulatory requirements for handling, storage, and documentation of controlled substances and potentially hazardous chemical materials.
2-4- COMPETENCY		**Upon completion of 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**	Identify the chemical properties, toxicity profiles, and potential hazards of pharmaceutical poisons and toxic organic substances. Focuses on understanding the chemistry and mechanisms of action of poisons relevant to pharmacy practice.
		2.4.2	Apply proper laboratory and workplace safety protocols for the storage, handling, and disposal of hazardous pharmaceutical chemicals. Includes PPE use, labeling, segregation, and safe waste management procedures.
		2.4.3	Interpret and implement national and international regulations governing the safe use, transport, and disposal of toxic substances in pharmaceutical settings.

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**
			Relates to compliance with pharmacy law, WHO guidelines, and environmental safety standards.

3. 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	Electronic structure of atom and hybridization. Introduction to organic compounds and the types of reactions they react.	4	2	2	------	-------
2	Alkanes, Cycloalkanes (nomenclature, synthesis & reactions)	4	2	2	------	-------
3	Alkenes (nomenclature, synthesis & reactions)	4	2	2	------	-------
4	Alkenes (nomenclature, synthesis & reactions)	4	2	2	------	-------
5	Alkyl halides (nomenclature, synthesis and chemical reactions (SN1, SN2, E1, E2)	4	2	2	------	-------
6	Alkynes and Alkadienes (nomenclature, synthesis & reactions)	4	2	2	------	-------
7	Periodical exam					
8	Introduction to stereochemistry	4	2	2	------	-------
9	Stereochemistry (cont.)	4	2	2	------	-------
10	Stereochemistry (cont.)	4	2	2	------	-------
11	Stereochemistry (cont.)	4	2	2	------	-------
12	Aromaticity & aromatic compounds.	4	2	2	------	-------
13	Benzene & electrophilic substitution	4	2	2	------	-------
14	Electrophilic substitution & arenes.	4	2	Practical exam		
15	Nucleophilic substitutions related to aromatic compounds.	4	2	Practical exam		

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	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), 7th edition (2014) W. H. Freeman and company. NY. McMurry, J. in organic chemistry, 9th ed. (2015), Brooks/Cole, London. Solmon's T. W. G. in Organic Chemistry 12th ed. (2015), John Wiley and sons, Inc, NY. I. L. Finar Organic Chemistry Volume 1: The Fundamental Principles 6th edition,2012, Longman Publishing Group. I. L. Finar Organic Chemistry Volume 2: Stereochemistry and the chemistry of natural products 6th edition, 2012, Longman Publishing Group. Bruice, P. Y. in organic chemistry, 8th edition (2017), Pearson education int. NY.
	Other References	Solmon's T. W. G. in Organic Chemistry 12th ed. (2015), John Wiley and sons, Inc, NY. I. L. Finar Organic Chemistry Volume 1: The Fundamental Principles 6th edition,2012, Longman Publishing Group. I. L. Finar Organic Chemistry Volume 2: Stereochemistry and the chemistry of natural products 5th edition, 2012, Longman Publishing Group
	Electronic Sources	https://www.ekb.eg/ar/home 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.
	Supplies	Classrooms.

Course Plan

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

Course title: Pharmaceutical organic chemistry I Course code: PC 101

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	**Electronic structure of atom and hybridization. Introduction to organic compounds and the types of reactions they react.**	1.1.1, 1.1.3, 2.2.1.	Lectures and class activities	Written and oral exams
Week # 2	**Alkanes, Cycloalkanes (nomenclature, synthesis & reactions)**	1.1.1, 1.1.3, 2.2.1, 2.2.2.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 3	**Alkenes (nomenclature, synthesis & reactions)**	1.1.1, 1.1.3, 2.2.1, 2.2.2, 2.2.3, 2.3.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 4	**Alkenes (nomenclature, synthesis & reactions)**	1.1.1, 1.1.3, 2.2.1, 2.2.2, 2.2.3, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 5	**Alkyl halides (nomenclature, synthesis and chemical reactions (SN1, SN2, E1, E2)**	1.1.1, 1.1.3, 2.2.1, 2.2.2, 2.2.3, 2.3.1, 2.3.2.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 6	**Alkynes and Alkadienes (nomenclature, synthesis & reactions)**	1.1.1, 1.1.3, 2.2.2, 2.2.3, 2.3.1, 2.3.2.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 7	**Periodical exam**			
Week # 8	**Introduction to stereochemistry**	1.1.1, 1.1.3, 2.2.2, 2.2.3, 2.3.1, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 9	**Stereochemistry (cont.)**	1.1.1, 1.1.3, 2.2.1, 2.2.2, 2.2.3, 2.3.1, 2.3.2, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams

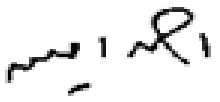
Week # 10	**Stereochemistry (cont.)**	1.1.1, 1.1.3, 2.2.1, 2.2.2, 2.2.3, 2.3.1, 2.3.2, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 11	**Stereochemistry (cont.)**	1.1.1, 1.1.3, 2.3.1, 2.3.2, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 12	**Aromaticity & aromatic compounds.**	1.1.1, 1.1.3, 2.2.1, 2.2.2, 2.3.1, 2.3.2, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 13	**Benzene & electrophilic substitution**	1.1.1, 1.1.3, 2.2.1, 2.2.2, 2.2.3, 2.3.1, 2.3.2, 2.4.1.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 14	**Electrophilic substitution & arenes.**	1.1.1, 1.1.3, 2.2.1, 2.2.2, 2.2.3, 2.3.1, 2.3.3.	Lectures, practical training and class activities	Written, practical and oral exams
Week # 15	**Nucleophilic substitutions related to aromatic compounds.**	1.1.1, 1.1.3, 2.2.1, 2.2.2, 2.3.1, 2.3.2.	Lectures 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)	Pharmacy orientation			
Course Code (according to the bylaw)	PT 101			
Department/s participating in delivery of the course	Pharmaceutics & Pharmaceutical Technology			
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	First level, semester (1)			
Academic Program	Bachelor of Pharmacy (PharmD, clinical)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Prof. Abdelaziz Elsayed Abdelaziz Lecturer/ Aya Refat Mohammed			
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 is a course to acquaint the beginning pharmacy student with the multiple aspects of the profession of pharmacy, including the mission of pharmacy, role of pharmacist in society and pharmacy careers, classification of medications, interpretation of prescriptions and medication orders, general dispensing procedure and factors affecting drug dosage, sources of drugs, different dosage forms and various routes of administration. In addition to the history of pharmacy practice in various civilizations.

3. Course Learning Outcomes CLOs

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

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		**Course Learning Outcomes** Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
Domain 1 (FUNDAMENTAL KNOWLEDGE) 1-1- COMPETENCY		Upon completing this course, students will be able to integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials and deliver pharmaceutical 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**	Retrieve basic scientific drug information from different resources to manage different therapeutic issues and improve health care services.
		1.1.2	Explore all aspects of the profession of pharmacy, including the mission of pharmacy, the role of pharmacists in society, and pharmacy careers.
		1.1.3	Identify all different international and national pharmaceutical organizations.
		1.1.4	Know the information resources in the pharmacy
		1.1.5	Identify all routes of drug administration and their advantages and disadvantages.
		1.1.6	Differentiate between the different systems of weights and measures.

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	Know the different ways of expressing drug concentration in pharmacy practice.
		1.1.8	Identify the different methods for calculating the dose for children or infants based on age, body weight, and body surface area
		1.1.9	Know the different types of drug incompatibilities.
1.1.2	Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	**1.1.10**	Understand the major medical and pharmaceutical terms.
		1.1.11	Communicate efficiently and effectively with other healthcare teams using the proper pharmaceutical and medical terms, abbreviations, and symbols
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-1- COMPETENCY		Upon completing this course, students will be able to work as collaborative members of an interprofessional healthcare team to improve the quality of life of patients and communities. **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**	Identify the prescription types and different medication errors and the preventive approaches for these errors.
		2.1.2	Calculate the proper dose for children or infants based on age, body weight, and body surface area.
2.1.2	Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.	**2.1.3**	Provide the student with pharmacy ethics information.
		2.1.4	Identify Steps to improve rational drug prescribing
2-2- COMPETENCY		Upon completing this course, students will be able to participate in systems for dispensing, storage, and distribution of medicines and medical devices **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**
2.2.2	Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.	**2.2.1**	Identify and deal with different types of incompatibilities including physical, chemical and therapeutic incompatibilities.
2-5- Competency		Contribute in pharmaceutical research studies 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**	Apply regulatory frameworks to ensure the authorization of medicinal products in compliance with quality, safety, and efficacy requirements.
	DOMAIN 4: Personal Practice **4-2- COMPETENCY**	Upon completing this course, students will be able to effectively communicate verbally, non-verbally, and in writing with individuals and communities. **This competency will be developed via the following key elements:**	
4.2.2	Use contemporary technologies and media to demonstrate effective presentation skills.	**4.2.1**	Use recent technologies to effectively present a topic of interest.

4. Teaching and Learning Methods

1- Lectures (√)

2- E-learning (√)

3- Practical training/ laboratory (x)

4- Brain storming, Discussion (√)

5- 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**		-------	-------	-------
2	Pharmacy education	**1**	**1**	-------	-------	-------
3	Scope of pharmacy and jobs of pharmacists	**1**	**1**	-------	-------	-------
4	Organizations Information resources in pharmacy	**1**	**1**	-------	-------	-------
5	Routes of drug administration	**1**	**1**	-------	-------	-------
6	Routes of drug administration (cont.)	**1**	**1**	-------	-------	-------
7	**Periodical exam**					
8	Pharmaceutical dosage forms	**1**	**1**	-------	-------	-------
9	Pharmaceutical dosage forms (cont.)	**1**	**1**	-------	-------	-------
10	Medical and pharmaceutical terminology	**1**	**1**	-------	-------	-------
11	Rational drug use	**1**	**1**	-------	-------	-------
12	Ethics of pharmacy	**1**	**1**	-------	-------	-------
13	Standards of practice	**1**	**1**	-------	-------	-------
14	The prescription	**1**	**1**	-------	-------	-------
15	Drug Incompatibility	**1**	**1**	-------	-------	-------

5. Methods of students' assessment

No.	Assessment Methods	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Exam written (formative exam)	4, 10	training	-----
2	Periodical exam	7	15	15%
3	Final Written Exam	16/17	85	85%
4	Final Practical/Clinical/… Exam	-----	-----	-----
5	Final Oral Exam	------	------	------
6	Assignments / Project /Portfolio/ Logbook	-----	-----	-----
7	Field training	------	------	------
8	Other (Mention)	-----	-----	-----

6. Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.)	**The main (essential) reference for the course**	Pharmacy: An Introduction to the Profession by Abir A. Kahaleh and L. Michael Posey. Remington JP, editor. *Remington: The science and practice of pharmacy*.23rd ed Pharmaceutical Press; 2021.
	Other References	Faculty of Pharmacy, Kafrelsheikh University. *Student handbook and orientation guide*. Latest ed. Kafrelsheikh: Kafrelsheikh University; 2025.Orientation in Pharmacy: An Overview.
	Electronic Sources (Links must be added)	https://www.fda.gov/ https://www.ich.org/
	Learning Platforms (Links must be added)	**https://lms3.kfs.edu.eg/pharm/login/index.php**
	Other (to be mentioned)	**----------**
Supportive facilities & equipment for	**Devices/Instruments**	**-----**
	Supplies	**------**
	Electronic Programs	**----**

teaching and learning	**Skill Labs/ Simulators**	**----**
	Virtual Labs	**----**
	Other (to be mentioned)	• Class rooms. • Data show, smart board, Unit for distance learning, Computers, Internet and Library.

Course Plan

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

Course title: Pharmacy orientation **Course code: PT** 101

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Introduction	1.1.1, 1.1.2.	Lectures and discussions.	Written exams
Week # 2	Pharmacy education	1.1.1, 1.1.2.	Lectures, brain storming and discussions.	Written exams
Week # 3	Scope of pharmacy and jobs of pharmacists	1.1.1, 1.1.2, 2.1.1	Lectures and discussions.	Written exams.
Week # 4	Organizations Information resources in pharmacy	1.1.1, 1.1.2, 1.1.3.	Lectures and discussions.	Written exams, formative exam
Week # 5	Routes of drug administration	1.1.1, 1.1.2, 1.1.4	Lectures and discussions.	Written exams
Week # 6	Routes of drug administration (cont.)	1.1.1, 1.1.2, 1.1.5, 4.2.1.	Lectures and discussions.	Written exams
Week # 7	**Periodical exam**			
Week # 8	Pharmaceutical dosage forms	1.1.1, 1.1.2, 1.1.5, 4.2.1	Lectures and discussions.	Written exams
Week # 9	Pharmaceutical dosage forms (cont.)	1.1.6, 1.1.7, 1.1.8, 2.1.1.	Lectures and discussions.	Written exams
Week # 10	Medical and pharmaceutical terminology	1.1.10, 1.1.11, 4.2.1	Lectures and discussions.	Written exams, formative exam.
Week # 11	Rational drug use	1.1.1, 1.1.2, 2.1.4, 2.5.1.	Lectures and discussions.	Written exams
Week # 12	Ethics of pharmacy	1.1.1, 1.1.2, 2.1.3, 2.5.1.	Lectures and discussions.	Written exams

Week # 13	Standards of practice	1.1.6, 1.1.7, 2.1.1, 2.1.2	Lectures and discussions.	Written exams
Week # 14	The prescription	1.1.6, 1.1.7, 2.1.1, 2.1.2	Lectures and discussions.	Written exams
Week # 15	Drug Incompatibility	1.1.9, 2.2.1	Lectures and discussions.	Written exams

Name and Signature
Course Coordinator
Prof. Abdelaziz Elsayed Abdelaziz
Lecturer/ Aya Refat Mohammed

Name and Signature
Program Coordinator
Ass. Prof. Ahmed Amin

Course Specification (2025)

1. Basic Information

Course Title (according to the bylaw)	Medicinal plants			
Course Code (according to the bylaw)	PG 101			
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	Registration			
Academic level at which the course is taught	First level, semester 1			
Academic Program	Bachelor in pharmacy (Pharm D) Clinical Pharmacy			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafr Elsheikh University			
Name of Course Coordinator	Associate. Prof. Mai El Naggar			
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 is to provide students with knowledge necessary to identify and prepare a crude drug from the farm to the firm. Students should acquire knowledge concerning dusting powders, plant cytology, physiologymedicinal leafy plants. In this course, the student will study: importance of natural products, preparation of natural products-derived drugs including collection, storage, preservation and adulteration. The course will introduce the students to the different classes of secondary metabolites. In addition, the course will discuss and address the variability in occurrence of pharmacologically active substances in certain official medicinal leafy plants according to their WHO monographs.

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 anatomical and taxonomical sciences to classify and identify different natural sources of medicinal products.**	
1.1.1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Describe the different plant cells, contents and organs .
		1.1.2	Identify the main natural drugs and their botanical sources.
		1.1.3	List the morphological and anatomical characteristics of medicinal plants.
1.1.3	Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality	1.1.4	Identify newly discovered natural sources of bioactive compounds.
		1.1.5	Describe the effect of adulteration on the quality, safety, and efficacy of medicinal plants.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
	synthetic/natural pharmaceutical .materials/products	1.1.6	Recognize sustainable practices for cultivation and harvesting of medicinal plants in response to global health demands.
1.1.6	Utilize scientific literature and collect and interpret information to enhance professional decision.	1.1.7	Retrieve relevant scientific literature related to medicinal plants and natural products.
		1.1.8	Interpret pharmacognostic and ethnopharmacological data from research studies.
		1.1.9	Describe literature findings in plant identification, authentication, and quality control
1.1.7	Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care	1.1.10	List major active constituents obtained from different natural sources and their associated pharmacological activities.
		1.1.11	Explain the impact of newly emerging issues on the selection, formulation, and use of natural products in the pharmaceutical industry.
		1.1.12	Explain the role of bioactive natural products in addressing current challenges in patient
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE 2-2- COMPETENCY		**Upon finishing this course, students will be able to Handle and dispose natural pharmaceutical materials/products effectively and safely with respect to relevant laws and legislations. This competency will be developed via the following key elements:**	
2.2.1	Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/natural pharmaceutical materials.	2.2.1	Identify living organisms and plant families that are sources of pharmaceutical drugs.
		2.2.2	Recognize appropriate methods for identification of bioactive natural 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**
		2.2.3	Summarize techniques for isolation and standardization of active constituents from natural sources.
2.2.2	Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.	2.2.4	State GMP and QC principles for collection, drying, and storage of crude medicinal plants.
		2.2.5	Outline proper storage conditions to preserve the quality of plant materials.
		2.2.6	Implement quality control measures during the handling of medicinal plants and natural products.
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.	2.2.7	Use microscopes effectively for plant identification.
		2.2.8	Observe the properties and differences between plant cells, tissues, and organs using microscopy.
		2.2.9	Apply suitable analytical techniques, including chemical tests, for identifying natural active constituents.
2-3- COMPETENCY		**Upon finishing this course, students will be able to Handle and dispose biological and 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	2.3.1	Handle natural products and materials used in examination without risk to individuals or the environment.
		2.3.2	Dispose plant and chemical waste according to safety and environmental 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**
	radio-labeled products, and other materials/products used in pharmaceutical field.	2.3.3	Demonstrate safe handling of laboratory equipment and reagents.
2.3.2	Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	2.3.4	Recognize relevant laws and legislations for safe handling and disposal of pharmaceutical materials.
		2.3.5	Adopt ethical and safety practices during laboratory work.
		2.3.6	Follow GLP standards and institutional safety protocols in the lab.
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.		3.2.1	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.
DOMAIN 4: PERSONAL PRACTICE **4-1- COMPETENCY**		**Upon finishing this course, students will be able to express critical thinking and problem-solving skills.** **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**	Demonstrate responsibility in authenticating plant raw materials through collaborative laboratory work.
		4.1.2	Apply effective time management strategies during plant identification, documentation, and reporting activities.
		4.1.3	Evaluate peer contributions and team performance in projects related to medicinal plant analysis
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 organize relevant literature and reference data for solving pharmacognosy-related problems.
		4.1.5	Collaborate with peers to identify and address challenges in the authentication and utilization of medicinal plants.
		4.1.6	Critically analyze collected information to propose practical solutions within team-based assignments.
4-2- Competency		**Upon finishing this course, student will be able to communicate effectively with individuals and colleagues.** **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**	Present plant anatomy and taxonomical classification clearly and scientifically using appropriate visual aids and presentation tools.
		4.2.2	Simplify complex botanical concepts to suit the audience's level of understanding, ensuring both accuracy and engagement.

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	Demonstrate effective verbal and non-verbal communication techniques when delivering scientific information to diverse audiences.

4. Teaching and Learning Methods

1. Lectures
2. Practical training/ laboratory
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	Introduction to medicinal plants	**4**	**2**	**2**		
2	Anatomy of plant cell.	**4**	**2**	**2**		
3	Anatomy of plant tissue.	**4**	**2**	**2**		
4	Anatomy of plant organs (stem, and root)	**4**	**2**	**2**		
5	Anatomy and morphology of plant leaf.	**4**	**2**	**2**		

6	Introduction for taxonomy	**4**	**2**	**2**		

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)**
7	**Mid-term exam**					
8	Domains and kingdoms of living organisms.	**4**	**2**	**2**		
9	Introduction to taxonomical classifications of plant kingdom	**4**	**2**	**2**		
10	Introduction to pharmacognosy.	**4**	**2**	**2**		
11	Classes of secondary metabolites.	**4**	**2**	**2**		
12	Introduction for the medicinal leaves	**4**	**2**	**2**		
13	Study, evaluation and critical analysis of WHO monographs for selected medicinal leaves -1	**4**	**2**	**2**		
14	Study, evaluation and critical analysis of WHO monographs for selected medicinal leaves -2	**2**	**2**	**Practical exam**		
15	Study, evaluation and critical analysis of WHO monographs for selected medicinal leaves -3	**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	15	15%
4	Final Oral Exam	16, 17	10	10%
5	Assignments / Project /Portfolio/ Logbook	14, 15	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)	• 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 • Evert, R. F. (2021). *Anatomy of flowering plants: An introduction to structure and development* (4th ed.). Cambridge University Press. • Singh, S. B., & Pelaez, F. (Eds.). (2021). *Bioactive natural products in drug discovery*. Springer. https://doi.org/10.1007/978-981-15-1394-7
	Other References	• "Encyclopedia of Common Natural Used in Food, Drugs and Cosmetics", Leung A.Y. and Faster.
	Electronic Sources (Links must be added)	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 (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 Microscopes
	Supplies	Class rooms Computers Library Internet Data show
	Electronic Programs	
	Skill Labs/ Simulators	Interactive boards and distant learning unit
	Virtual Labs	
	Other (to be mentioned)	

Name and Signature
Course Coordinator

Associate. Prof. Dr. Mai El Naggar

Name and Signature
Program Coordinator

Prof/ Abdelaziz Elsayed Elashmawy

Medical Terminology Course Specification (2025)

1. Basic Information

Course Title (according to the bylaw)	Medical Terminology			
Course Code (according to the bylaw)	MD 101			
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
	1	----	----	1
Course Type	Compulsory			
Academic level at which the course is taught	First level, semester (1)			
Academic Program	Bachelor of Pharmacy (Pharm D) (Clinical pharmacy)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Dr. Samar El-sebaey			
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 introduces students to the fundamental principles of medical and pharmaceutical terminology, including commonly used medical abbreviations, idiomatic expressions, prefixes, and suffixes. It also covers the formation and interpretation of medical terms related to major body systems, enabling students to accurately understand, use, and communicate medical language in professional healthcare settings.

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 foundational knowledge of medical and pharmaceutical terminology, including abbreviations, prefixes, suffixes, and system-specific terms, to accurately interpret, use, and communicate healthcare-related information in population- and patient-centered care.**	
1-1-1	Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1	Demonstrate understanding of the fundamental components of medical terms, including prefixes, roots, and suffixes.
1-1-2	Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	1.1.2	Apply knowledge of medical terminology related to various body systems (e.g., digestive, respiratory, cardiovascular) in professional healthcare contexts.
		1.1.3	Recognize and appropriately use common medical vocabulary employed by healthcare professionals.
		1.1.4	Accurately retrieve and interpret information

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**
			from patient file documents.
1-1-3	Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze and assure quality of synthetic/natural pharmaceutical materials/products.	1.1.5	Apply knowledge of medical and pharmaceutical terminology to accurately document, label, and communicate information related to pharmaceutical products and materials, ensuring clarity, safety, and compliance with professional standards.

4. Teaching and Learning Methods

1. Lectures
2. E learning
3. Discussion
4. Brain storming
5. Assignment
6. Case study

Course Schedule						
Number of the Week	Scientific content of the course (Course Topics)	Total Weekly Hours	Expected number of the Learning Hours			
			Theoretical teaching (lectures/discussion groups/ .....)	**Training** (Practical/Clinical/ .....)	**Self-learning** (Tasks/ Assignments/ Projects/ ...)	**Other** (to be determined)
1	Introduction	**1**	**1**			
2	Level of organization	**1**	**1**			
3	Digestive system	**1**	**1**			
4	Cardiovascular system	**1**	**1**			
5	Blood	**1**	**1**			
6	Nervous system	**1**	**1**			
7	Semester work					
8	Endocrine terminology	**1**	**1**			
9	Eye and ear Terminology	**1**	**1**			
10	Skin Terminology	**1**	**1**			
11	Urinary system	**1**	**1**			
12	Respiratory system	**1**	**1**			
13	Medical records	**1**	**1**			
14	Prescription abbreviation	**1**	**1**			
15	Revision	**1**	**1**			

5. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Formative exam	4	5	5%
2	Periodic exam written (Semester work)	7	10	10%
3	Final Written Exam	16, 17	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)	Medical Terminology: a living language 4th edition Fremgen BS and Frucht SS, 2009 Marjorie C. Willis (1996): Medical Terminology, the basic language of health care, first edition. Williams & Wilkins Press, Baltimore
	Other References	Andrew R. Hutton (2002): An introduction to medical terminology for health care, A self-teaching package, third edition. Churchill-Livingstone-Elsevier Press, Edinburgh
	Electronic Sources (Links must be added)	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 Internet
	Supplies	----------
	Electronic Programs	----------
	Skill Labs/ Simulators	----------
	Virtual Labs	----------
	Other (to be mentioned)	Library Class rooms

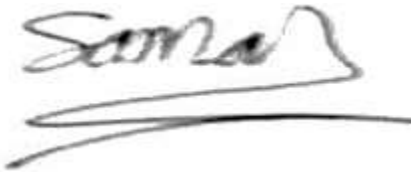
Course Plan

Course Contents		ILOs	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Introduction	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 2	Level of organization	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 3	Digestive system	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.	Lectures and brain storming	Written exams
Week # 4	Cardiovascular system	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 5	Blood	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 6	Nervous system	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 7	Semester work			
Week # 8	Endocrine terminology	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 9	Eye and ear Terminology	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 10	Skin Terminology	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 11	Urinary system	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 12	Respiratory system	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 13	Medical records	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams
Week # 14	Prescription abbreviation	1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.5	Lectures and brain storming	Written exams

Week # 15	Revision		Lectures and brain storming	Written and oral exams

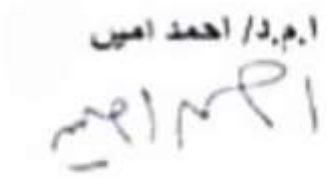
Name and Signature
Course Coordinator

Dr. Samar El-sebaey



Name and Signature
Program Coordinator

Prof. Dr. Ahmed Amin



Kafrelsheikh University

Faculty of Pharmacy

جامعة كفر الشيخ

كلية الصيدلة

Course Specification

(2025)

1. Basic Information

Course Title (according to the bylaw)	Information Technology			
Course Code (according to the bylaw)	NP 101			
Department/s participating in delivery of the course	Department of Information Technology. (Faculty of Computing and Information) Department of Pharmaceutical chemistry (Faculty of Pharmacy)			
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	Level (1), Semester (1)			
Academic Program	Bachelor of Pharmacy (Pharm-D Clinical)			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Prof.Dr. Ahmed Elashery			

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 tends to provide students with a brief introduction to the world of computers and the concept of information technology including: number systems and data representation, computer system components: hardware & software, storage and input/output systems, Operating systems and Utility Systems, software applications. Also, it gives an overview about computer networks and internet: data communication, transmission modes, transmission media, computer networks, internet protocol, and internet services. It practices some computer applications in the laboratory such as Internet Access, word processing and power point. It gives students a practical experience on developing projects related to the specialty.

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 basic knowledge from information technology to deliver population-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**	Demonstrate understanding of the basic concepts of information technology
		1.1.2	Identify recent applications of information technology in drug market and pharmacy.
		1.1.3	Retrieve information from a variety of sources such as online medical databases and website.
		1.1.4	Integrate knowledge about theoretical application of computing in medical field and pharmacy, and importance in reasoning, communication and system development.
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 medicine.**	
2.2.4	Adopt the principles of pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and bio-pharmaceutics and their applications in new drug delivery systems, dose modification, bioequivalence studies, and pharmacy practice.	**2.2.1**	Apply basic concepts of number systems and data representation to organize and process pharmaceutical data**.**
		2.2.2	Explain the principles of data communication, transmission modes, transmission media, and networking concerning pharmacy informatics.

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**
		2.2.3	Integrate artificial intelligence applications into pharmacy practice for improved drug delivery systems and patient care.
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**	Demonstrate creativity for Ideas formulation and presentation.
		4.2.2	Identify and select suitable presentation software and digital tools to match the topic and audience.

4. Teaching and Learning Methods

1. Lectures
2. E-learning
3. Practical training/ laboratory
4. Discussion
5. Brain storming
6. Assignments
7. Presentations

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 information technology and use of Information systems in society.	**2**	**1**	**1**		
2	Information technology concepts, policy and ethics.	**2**	**1**	**1**		
3	Information system, Operating systems and Utility Systems.	**2**	**1**	**1**		
4	Components of computer system (hardware & software)	**2**	**1**	**1**		
5	Microsoft office (Introduction to Word processing and power point data presentation).	**2**	**1**	**1**		
6	Microsoft office (Introduction to Access data-bases and Excel programs).	**2**	**1**	**1**		
7	**Periodical exam**					
8	Computer networks, internet protocol, and internet services.	**2**	**1**	**1**		
9	Data communication, transmission modes and transmission media.	**2**	**1**	**1**		
10	Online drug databases.	**2**	**1**	**1**		
11	Artificial intelligence in the field of Pharmacy.	**2**	**1**	**1**		
12	Overview of Computer Aided Drug design (CADD) programs.	**2**	**1**	**1**		
13	Overview of Computer-based dry labs (Virtual labs).	**2**	**1**	**1**		

14	Overview of Computer-based virtual clinics and virtual pharmacy.	**2**	**1**	**1**		
15	Revision	**2**	**1**	**1**		

5. 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%

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)	- Morrison, Connie, Wells, Dolores J., & Ruffolo, Lisa. Computer Literacy BASICS: A Comprehensive Guide to IC3. 5th Edition. Boston, MA: Cengage Learning, 2022. ISBN: 9781285766584. -Information Technology for Management: Navigating the Digital Divide to Enhance Local and Global Performance, Growth, and Sustainability. 13th Edition. Hoboken, NJ: John Wiley & Sons, 2023. ISBN: 9781119702900.
	Other References	-Rainer, R. Kelly, & Prince, Brad. Introduction to Information Systems: Supporting and Transforming Business. 10th Edition. Hoboken, NJ: John Wiley & Sons, Inc., 2023 -Introduction to Information Systems by James - A. O'Brien ,George Maracas' James Obrien. ISBN: 0073043559
	Electronic Sources (Links must be added)	https://www.medscape.com/ https://praxilabs.com/en/

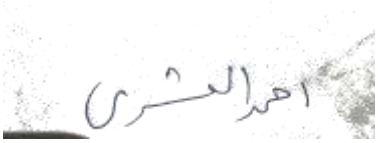
		https://www.sib.swiss/
	Learning Platforms (Links must be added)	https://lms3.kfs.edu.eg/pharm/login/index.php
	Other (to be mentioned)	**---**
Supportive facilities & equipment for teaching and learning	**Devices/Instruments**	Laboratory facilities
	Supplies	computers
	Electronic Programs	**---**
	Skill Labs/ Simulators	**---**
	Virtual Labs	**---**
	Other (to be mentioned)	Data show, smart board, Unit for distance learning, Computers, Internet and Library.

Course plan

Wk.	Topic	Key Elements	Teaching & Learning Methods	Student Assessment Methods
1	Introduction to information technology and use of Information systems in society.	1.1.1,	Lectures, and brain storming	Written, and oral exams
2	Information technology concepts, policy and ethics.	1.1.1, 1.1.2,2.2.1	Lectures and seminar.	Written, and oral exams
3	Information system, Operating systems and Utility Systems.	1.1.1	Lectures and practical training	Written, practical and oral exams
4	Components of computer system (hardware & software)	1.1.1, 1.1.4,	Lectures, practical and brain storming	Written, practical and oral exams
5	Microsoft office (Introduction to Word processing and power point data presentation).	1.1.1, 1.1.4, 2.2.1 ,2.2.2	Lectures, practical and brain storming	Written, practical and oral exams
6	Microsoft office (Introduction to Access data-bases and Excel programs).	1.1.1, 1.1.4,	Lectures, practical and brain storming	Written, practical and oral exams
7	**Periodical exam**			
8	Computer networks, internet protocol, and internet services.	1.1.3, 4.2.1, 4.2.2,	Lectures and **seminar**.	Written, practical and oral exams
9	Data communication, transmission modes and transmission media.	1.1.3,2.2.2,4.2.1, 4.2.2,	Lectures, **Seminar**, discussion and brain storming	Written, practical and oral exams
10	Online drug databases.	1.1.2, 1.1.3, 1.1.4,	Lectures, practical and brain storming	Written, practical and oral exams

11	Artificial intelligence in the field of Pharmacy.	1.1.2, 1.1.3, 1.1.4, 2.2.3	Lectures, practical and brain storming	Written, practical and oral exams
12	Overview of Computer Aided Drug design (CADD) programs.	1.1.2, 1.1.3, 1.1.4, 4.2.1,4.2.2	Lectures, practical and brain storming	Written, practical and oral exams
13	Overview of Computer-based dry labs (Virtual labs).	1.1.2, 1.1.3, 1.1.4,4.2.1,4.2.2	Lectures, practical and brain storming	Written, practical and oral exams
14	Overview of Computer-based virtual clinics and virtual pharmacy.	1.1.2, 1.1.3, 1.1.4 ,4.1.2,4.2.2	Lectures, practical and brain storming	Written, practical and oral exams
15	Revision	1.1.1,	Lectures, discussion and brain storming	Written, and oral exams

Name and Signature
Course Coordinator
Prof.Dr. Ahmed Elashery



Name and Signature
Program Coordinator

Prof. Dr. Abdelaziz Elashmawy

Course Specification
2025

1. Basic Information

Course Title (according to the bylaw)	Mathematics			
Course Code (according to the bylaw)	MS101			
Department/s participating in delivery of the course	Microbiology and Immunology			
Number of credit hours/points of the course (according to the bylaw)	**Theoretical**	**Practical**	**Other (specify)**	**Total**
	1	**0**		**1**
Course Type	Compulsory			
Academic level at which the course is taught	First level, semester 1			
Academic Program	Bachelor of Pharmacy (clinical Pharm D program)			
Faculty	Faculty of Pharmacy			
University	Kafrelshiekh University			
Name of Course Coordinator	Dr. Osama Abu-seada			
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 an essential guide to the mathematical concepts, techniques, and calculations, a student in the pharmaceutical sciences is likely to encounter. It includes definition of Number, Variable, Function, composition of functions, different types of functions. Definition of Limits of one variable functions, continuity, differentiability and applications of these concepts. Definition of the definite and indefinite integrals. The fundamental theorem of calculus and application of definite integral. Determined the area arc length, volumes and surfaces of revolutions Differentiation and integrations of exponential, logarithmic, trigonometric and transcendental functions. Techniques of integrations, trigonometric and transcendental functions. Techniques of integrations. Matrix Algebra and system of linear equations.

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 mathematical science to analyze and solve quantitative problems, optimize formulations and processes.** **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 understanding of fundamental mathematical principles.
		1.1.2	Apply binomial expansion to solve algebraic problems and estimate pharmaceutical quantities.
		1.1.3	Utilize curve fitting techniques to analyze and model biological or experimental data.
		1.1.4	Use differential calculus to determine rates of change in pharmaceutical processes
		1.1.5	Demonstrate understanding of related rates and draw curves representing dynamic systems.

Program Outcomes (NARS/ARS) (according to the matrix in the program specs)		Course Learning Outcomes Upon completion of the course, the student will be able to:	
Code	**Text**	**Code**	**Text**
		1.1.6	Apply Gaussian distribution and probability concepts to analyse variability as in pharmaceutical studies.
		1.1.7	Demonstrate understanding of related rates and draw curves representing dynamic systems.
		1.1.8	Interpret data using appropriate mathematical and graphical tools.
DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE **2-2- COMPETENCY**		**Upon finishing this course, students will be able to apply mathematical principles to analyze and interpret pharmaceutical data, perform calculations related to formulation and manufacturing processes.** **This competency will be developed via the following key elements:**	
2.2.4	Adopt the principles of pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and bio-pharmaceutics and their applications in new drug delivery system, dose modification, bioequivalence studies and pharmacy practice.	**2.2.1**	Recognize the importance of mathematics in solving analytical and pharmaceutical calculation problems.
		2.2.2	Apply the binomial theorem to perform algebraic calculations and simple estimations.
		2.2.3	Apply integration techniques to calculate total quantities and areas under curves in analytical or kinetic studies.
		2.2.4	Apply functional analysis to study relationships among changing quantities in mathematical and pharmaceutical contexts.
		2.2.5	Apply Gaussian distribution and probability concepts to interpret variability in mathematical and scientific data
		2.2.6	Integrate mathematical and analytical skills to support reasoning and quantitative problem-solving.

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**
		2.2.7	Utilize curve fitting techniques to model pharmacokinetic and bioequivalence data.

4. Teaching and Learning Methods

1- Lectures (√)

2- E-learning (√)

3- Discussion (√)

4- 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	Introduction to Mathematics	**1**	**1**			
2	Algebra-1 (The Binomial Theory)	**1**	**1**			
3	Algebra-1 (Fitting of Curves)	**1**	**1**			
4	Algebra-2 (Partial Fractions, Solution of Linear Equations)	**1**	**1**			

5	Algebra-2 (Using Determinants or Matrices)	**1**	**1**			
6	Functions and applications (1)	**1**	**1**			
7	**Periodical exam**	**1**	**1**			
8	Functions and applications (2)	**1**	**1**			
9	Differential Calculus	**1**	**1**			
10	Fundamentals Theories on Differentiation (Related Rates – Drawing of Curves)	**1**	**1**			
11	Integration-1	**1**	**1**			
12	Integration-2	**1**	**1**			
13	Data presentation	**1**	**1**			
14	Gaussian distribution and Probability	**1**	**1**			
15	Revision & Exercises	**1**	**1**			

5. Methods of students' assessment

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
2	Periodical exam	**7**	**15**	**15%**
3	Final Written Exam	**16-17**	**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)	Calculus: Early Transcendentals, 9th Edition (2022) James Stewart, Daniel Clegg, Saleem Watson - Linear Algebra and Its Applications, 6th Edition (2023) David C. Lay, Steven R. Lay, Judi J. McDonald
	Other References	-Notes of mathematics for pre pharmacy students, prepared and distributed by dep. Of accounting and information systems, faculty of commerce
	Electronic Sources (Links must be added)	http://www.math.com/ **https://www.basic-mathematics.com/math-websites.html**
	Learning Platforms (Links must be added)	**https://lms3.kfs.edu.eg/pharm/login/index.php**
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	**----**
	Supplies	**----**
	Electronic Programs	**----**
	Skill Labs/ Simulators	**----**
	Virtual Labs	**----**
	Other (to be mentioned)	**Class rooms, Data show, smart board, Unit for distance learning, Computers, Internet and Library.**

Course Plan

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

Course title: Mathematics Course code: MS101

Course Contents		Key elements	Teaching and Learning Methods	Student Assessment Methods
Week # 1	Introduction to Mathematics	1.1.1,1.1.8 2.2.1	Lectures, E-learning, and brain storming	Written exam

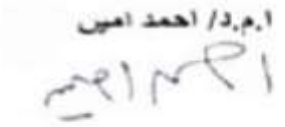
Week # 2	Algebra-1 (The Binomial Theory)	1.1.1, ,1.1.2 1.18. 2.2.1 2.2.2. 2.2.6	Lectures,E-learning, discussion and brain storming	Written exam
Week # 3	Algebra-1 (Fitting of Curves)	1.1.3, 1.1.5 1.1.7. 1.1.8 ,2.2.1 2.2.3 2.2.7	Lectures,E-learning, discussion and brain storming	Written exam
Week # 4	Algebra-2 (Partial Fractions, Solution of Linear Equations)	1.1.1, 1.1.8 ,2.2.1 2.2.3. 2.2.4 2.2.7	Lectures,E-learning, discussion and brain storming	Written exam
Week # 5	Algebra-2 (Using Determinants or Matrices)	1.1.1, 1.1.4. 1.1.8 ,2.2.1 2.2.3. 2.2.4 2.2.6. 2.2.7	Lectures,E-learning, discussion and brain storming	Written exam
Week # 6	Functions and applications (1)	1.1.1, 1.1.2. 1.1.4. 1.1.8 ,2.2.1 2.2.3. 2.2.4 2.2.6. 2.2.7	Lectures,E-learning, discussion and brain storming	Written exam
Week # 7	**Periodical exam**			
Week # 8	Functions and applications (2)	1.1.1, 1.1.2. 1.1.4,1.1.8 ,2.2.1,2.2.3. 2.2.4,2.2.6. 2.2.7	Lectures,E-learning, discussion and brain storming	Written exam
Week # 9	Differential Calculus	1.1.1, 1.1.2, 1.1.4, 1.1.8 2.2.1 2.2.2 2.2.3. 2.2.4	Lectures,E-learning, discussion and brain storming	Written exam
Week # 10	Fundamentals Theories on Differentiation (Related Rates – Drawing of Curves)	1.1.5. 1.1.7 2.2.6. 2.2.7	Lectures,E-learning, discussion and brain storming	Written exam
Week # 11	Integration-1	.1.1.1. 1.1.2. 1.1.3. 1.1.4. 1.1.6. 2.2.1. 2.2.2 .2.2.3 2.2.4	Lectures,E-learning, discussion and brain storming	Written exam

Week # 12	Integration-2	.1.1.1. 1.1.2. 1.1.3. 1.1.4. 1.1.6. 2.2.1. 2.2.2 .2.2.3 2.2.4	Lectures,E-learning, discussion and brain storming	Written exam
Week # 13	Data presentation	1.1.2, 1.1.4 1.1.6, 1.1.8 2.2.1, 2.2.2, 2.2.3, 2.2.4 2.2.6. 2.2.7	Lectures,E-learning, discussion and brain storming	Written exam
Week # 14	Gaussian distribution and Probability	.1.1.1. 1.1.2. 1.1.3. 1.1.4. 1.1.6. 2.2.1. 2.2.2 .2.2.3 2.2.4 2.2.5	Lectures,E-learning, discussion and brain storming	Written exam
Week # 15	Revision & Exercises	1.1.1, 1.1.2, 1.1.3, 1.1.4 1.1.5 1.1.6 1.1.7 1.1.8 2.2.1, 2.2.2,, 2.2.3, 2.2.4 2.2.5. 2.2.6. 2.2.7	Lectures,E-learning, discussion and brain storming	Written exam

Name and Signature
Course Coordinator
Dr. Dr. Osama Abu-seada

Name and Signature
Program Coordinator

Prof. Dr. Ahmed Amin



Course Specification

2025

1. Basic Information

Course Title (according to the bylaw)	Human Rights and Fighting Corruption (UR)			
Course Code (according to the bylaw)	UR 101			
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	-		1
Course Type	compulsory			
Academic level at which the course is taught	First level, semester 1			
Academic Program	Bachelor of Pharmacy (Pharm D.) Clinical Pharmacy			
Faculty/Institute	Faculty of Pharmacy			
University/Academy	Kafrelsheikh University			
Name of Course Coordinator	Dr. Maher Abo-khoat			
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)

يغطي هذا المقرر الموضوعات التالية: حقوق الانسان في القانون الجنائي، وحق الانسان في تغيير جنسيته أو التخلي عن إحدي جنسياته، والمواثيق الدولية المتعلقة بحماية حقوق الانسان، وعلاقة العولمة والتنمية بالحقوق الاقتصادية والاجتماعية والثقافية، الحقوق الاقتصادية والاجتماعية والثقافية للانسان، حقوق الانسان في الشريعة الاسلامية، حقوق المرأة في قانوني العمل والتأمين الاجتماعي، حقوق الانسان في التقاضي، الحقوق المدنية والسياسية للانسان.

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 foundational knowledge of human rights concepts, legal frameworks, and international/national sources to identify, analyze, and apply human rights principles, with a special focus on healthcare and medical practice contexts.** **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	يلم بالمقصود بحقوق الإنسان ومصدرها.
		1.1.2	يعدد أنواع حقوق الإنسان الفردية والجماعية
		1.1.3	يشرح كيفية حماية هذه الحقوق.
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**	

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:	
2.1.1	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**	يشرح الأسس القانونية واللوائح المنظمة لممارسة مهنة الصيدلة.
		2.1.2	يطبق مبادئ حقوق الإنسان في المواقف الصيدلانية العملية.
		2.1.3	يلتزم بالسلوكيات الأخلاقية عند التعامل مع المرضى وزملاء المهنة.
2.1.2	Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.	**2.1.4**	يصف المبادئ الأخلاقية الأساسية في مهنة الصيدلة.
		2.1.5	يحلل المواقف المهنية التي تتطلب مراعاة التنوع الثقافي.
		2.1.6	يربط بين القوانين الدولية لحقوق الإنسان وممارسة الصيدلة.
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:**	
2.5.1	Fulfill the requirements of the regulatory framework to authorize a medicinal product including quality, safety, and efficacy requirements.	**2.5.1**	طبق السياسات واللوائح المعمول بها في المؤسسات الصيدلية وفقًا للإطار القانوني.
		2.5.2	ينفذ خطوات وإجراءات العمل المؤسسية مع الالتزام بمعايير الجودة.
		2.5.3	يوثق جميع العمليات والأنشطة الصيدلية بما يتوافق مع القوانين واللوائح.
		2.5.4	يراقب الامتثال للمعايير واللوائح داخل بيئة العمل الصيدلية.
Domain 4: Personal Practice **4-1- Competency**		**Upon finishing this course, students will be able to express leadership, time management, critical thinking,**	

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**
			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	يقيّم أداء أعضاء الفريق وفق معايير مهنية وأخلاقية.
		4.1.2	يوجه الزملاء لتحسين الأداء الجماعي مع الحفاظ على روح الفريق.
		4.1.3	ينظم المهام والأنشطة وفق أولويات محددة لضمان استغلال الوقت بكفاءة.
4.1.2	Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	4.1.4	يستخلص المعلومات من مصادر متعددة ويعرضها بصورة منظمة.
		4.1.5	يحَلل البيانات والمعلومات تحليلاً نقدياً لاستخلاص استنتاجات دقيقة.
		4.1.6	يبتكر حلولاً مناسبة للمشكلات استنادًا إلى التفكير العلمي والنقدي.

4. Teaching and Learning Methods

.1- Lectures

2- E-learning

3- Discussion

4- Brain storming

5- Assignment

6- Presentation

Course Schedule			
Number	Scientific content of the course		Expected number of the Learning Hours

of the Week	(Course Topics)	Total Weekly Hours	Theoretical teaching (lectures/discussion groups/ .....)	Training (Practical/Clinical/ .....)	Self-learning (Tasks/ Assignments / Projects/ ...)	Other (to be determined)
1	- مقدمة	1	1	-		
2	- التعريف بحقوق الإنسان	1	1	-		
3	- قانون حقوق الإنسان (1)	1	1	-		
4	- قانون حقوق الإنسان (2) تكملة	1	1	-		
5	- قانون حقوق الإنسان (3) تكملة	1	1	-		
6	- مصادر قانون حقوق الإنسان (1)	1	1	-		
7	- مصادر قانون حقوق الإنسان (2) تكملة **الامتحان الدوري**	1	1	-		
8	- أنواع حقوق الإنسان (فردية)	1	1	-		
9	- أنواع حقوق الإنسان (جماعية)	1	1	-		
10	- حماية حقوق الإنسان (1)	1	1	-		
11	- حماية حقوق الإنسان (2) تكملة	1	1	-		
12	- تطبيقات حقوق الإنسان في المجال الطبي (1)	1	1	-		

13	- تطبيقات حقوق الإنسان في المجال الطبي (2)	**1**	**1**	**-**		
14	- تطبيقات حقوق الإنسان في المجال الطبي (3)	**1**	**1**	**-**		
15	- مراجعة عامة و مناقشة حره	**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)			
2	Periodical exam		**15**	
3	Final Written Exam		**85**	
4	Final Practical/Clinical/... Exam			

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: كتاب الطالب (حقوق الإنسان) (2024) الكتب الدراسية حقوق الإنسان
	Other References	ـ كتب مقترحة القانون الدولي الإنساني
	Electronic Sources (Links must be added)	مجلات دورية، مواقع انترنت، الخ مجلات حقوق الإنسان
	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**