



**توصيف برنامج بكالوريوس الصيدلة
(فارم دي - Pharm D) (صيدلة اكلينيكية)
طبقا لنظام الساعات المعتمدة**

(يونية - 2019)

Program Specification



A- Basic Information

1. **Program title:** Bachelor of Pharmacy (Pharm D.) (Clinical pharmacy)
2. **Program type:** Single
3. **Faculty:** Faculty of Pharmacy, Kafrelsheikh University.
4. **Departments:**

- Department of Pharmaceutical Chemistry
- Department of Pharmaceutical Analytical Chemistry
- Department of Biochemistry
- Department of Pharmaceutical Technology
- Department of Pharmacognosy
- Department of Microbiology and Immunology
- Department of Pharmacology & Toxicology
- Department of Clinical Pharmacy.

5 **Duration of program:** 5 years + one academic year of internship.

7. **Language of study:** English.

8. **Academic Reference Standards:** National Academic Reference Standards (NARS) for postgraduate studies, 1st Edition, February 2017 (National Authority for Quality Assurance and Accreditation).

9. **Coordinator:** Prof. Dr. Abdel Aziz El-Ashmawy

10. **External evaluation:**

11. **Program approval date:**

Professional Information

I: Program Aims:

The program aim to qualify pharmacists with skills and knowledge needed to provide different pharmacy services including community pharmacy, hospital pharmacy, industrial pharmacy with special interest in the clinical pharmacy skills that enable the pharmacist to share effectively in designing the therapeutic plans for each patients taking in consideration efficacy and safety of the designed protocols.

The graduates of Pharmacy collage, Kafrelsheikh university should be able to:

- I-1** Participate in community service and environmental development and provide a tangible economic return by rationalizing the use of medicines in hospitals.
- I-2** Apply the concepts of pharmaceutical care inside and outside the hospitals.
- I-3** Dispense pharmaceutical product utilizing evidence-based information and manipulate with chemicals safely and effectively respecting pharmacy law and legalizations.
- I-4** Formulate dispense pharmaceutical products from different sources.
- I-5** Share and supervise the drug supply chains (rules for transporting and shipping crude material and formulated drugs).
- I-6** Obey the rules of both GLP and GMP to assure the quality of raw materials, procedures and pharmaceutical products.
- I-7** Participate in polices of rational drug use through education and information services provided for patients and community.
- I-8** Demonstrate knowledge and understanding of diseases pathophysiology using evidence-based data as source of their information to improve health care services in collaboration with other healthcare team.
- I-9** Outline, design and perform researches in their work area using scientific methodology
- I-10** Evolve good presentation skills and develop entrepreneurial, promotion, marketing, business administration, numeric and computation skills.
- I-11** Communicate effectively with patient and other health care teams

- I-12** develop some important skills such as time management, critical thinking, problem solving, decision-making and team-working in order to make proper therapeutic decision.
- I-13** Obey legal, ethical, human rights and professional rules in performing each responsibility.
- I-14** Continue self-learning, self-assessment to improve his professional skills and update his knowledge.

2. Program learning outcomes:

On successful completion of the program, graduates will acquire the following key competencies in the following domains:

Domain 1- Fundamental Knowledge

1-1- Competency

Graduates 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 through the following key elements:

Key Elements

- 1.1.1. Show understanding of the basics of pharmaceutical, health, behavioral, management, and social sciences as well as pharmacy practice.
- 1.1.2. Articulate knowledge from the basics of analytical methods in compliance with rules of GLP.
- 1.1.3. Illustrate the qualitative and quantitative analysis of medicinal plants, active constituents as well as the methods of handling, identification, isolation and purification.
- 1.1.4. Integrate the knowledge from pharmaceutical chemistry to design, handle, prepare, identify, quantify and purify synthetic compounds.
- 1.1.5. Demonstrate understanding of knowledge from basic pharmaceutical sciences (drug mechanism of actions, safety and efficacy), and principles of pharmacy

practice (dispensing, rational use of medicine, drug information and pharmacovigilance).

- 1.1.6. Utilize administrative skills and medical language for proper documentation, drug filing and good pharmacy practice.
- 1.1.7. Integrate information from different scientific resources on recent technologies that contributes to pharmaceutical industries.
- 1.1.8. Retrieve basic scientific drug information from different resources to manage different therapeutic issues and improve health care services.
- 1.1.9. Articulate and interpret information from different scientific resources to improve professional decision-making skills.

Domain 2: Professional and Ethical Practice

2-1- Competency

Graduates will be able to work collaboratively as a member of an inter-professional health care team to improve the quality of life of individuals and communities, and respect patients' rights.

This competency will be developed via the following key elements:

Key Elements

- 2.1.1. Adopt pharmaceutical law, legislation and human rights in different pharmaceutical and health institutions.
- 2.1.2. Comply with ethical and legal guidelines in different health institutions among health care professionals during performing their responsibilities.
- 2.1.3. Recognize self-professional limitations and accept guidance from other health care colleagues.

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2-2- Competency

Graduates will be able to standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.

This competency will be developed via the following key elements:

Key Elements

- 2.2.1 Construct methods of isolation, synthesis, purification, identification of raw material.
- 2.2.2 Analyze, purify and standardize active substances from different origins.
- 2.2.3 Apply principles for quality assurance of raw materials, in-process and final products either from natural or synthetic compounds.
- 2.2.4 Adopt the rules of manufacturing, storage and transportation of all pharmaceutical substances.
- 2.2.5 Integrate pharmaceutical and physico-chemical knowledge in formulating safe and effective dosage forms taking in consideration incompatibilities issues.
- 2.2.6 Adopt recent knowledge in pharmaceutical technology to design new drug delivery systems.
- 2.2.7 Formulate and dispense pharmaceutical dosage form effectively and safely.
- 2.2.8 Select suitable method for characterization of pharmaceutical product, active ingredient and excipients.
- 2.2.9 Operate pharmaceutical equipment in industrial production lines.
- 2.2.10 Apply different pharmaceutical technologies in recent drug delivery systems.
- 2.2.11 Apply basic pharmacokinetic and biopharmaceutics and its application in drug monitoring and tailored therapeutic protocols for special population (pediatric, pregnant, geriatric, renal and hepatic patient).
- 2.2.12 Recognize the principal of bioavailability and bioequivalent studies.
- 2.2.13 Apply different methods of biological screening, pharmaceutical calculations and biostatistics.
- 2.2.14 Calculate and adjust proper dosages for different individuals with different patients' profiles.
- 2.2.15 Utilize a strategy for preparation, handling, and dispensing of radiopharmaceuticals.

2-3- Competency

Graduates will be able to handle and dispose biologicals 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:

Key Elements

- 2.3.1. Identify the physiochemical properties of all chemicals involved in pharmaceutical industry including biological, biotechnology and radio-labeled products.
- 2.3.2. Manipulate different chemical, pharmaceutical and biological products taking in consideration ethical, legal and safety guidelines.

2-4- Competency

Graduates will be able to actively share professional decisions and proper actions to save patient's life in emergency situations including poisoning with various xenobiotics, and effectively work in forensic fields.

This competency will be developed via the following key elements:

Key Elements

- 2.4.1. Identify toxicity profile of different drugs, gases, heavy metals and poisons from plant and animal origin to assure safe handling for individuals as well as community.
- 2.4.2. Apply first aid measures including ABC protocols for patient rescue as well as clinical picture and treatment approaches of major toxins from different sources.
- 2.4.3. Recognize adverse reaction (ADR) and toxicity of different pharmaceuticals; and manage such problems to improve individual health care.
- 2.4.4. Analyze the clinical pictures of the patient to identify the causative toxin from different xenobiotics.
- 2.4.5. Detect the cause of toxicity based on lab investigations of different biological samples and work efficiently in forensic team.

2-5- Competency

Graduates 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:

Key Elements

- 2.5.1. Obey the rules of regulatory guidelines in pharmacy to obtain final product complying with the requirements of quality and safety.
- 2.5.2. Conduct qualitative and quantitative analytical methods in pharmaceutical industry in compliance with compendial regulations.

- 2.5.3. Select, discuss and critically assess different evidence-based information in pharmacy profession.
- 2.5.4. Retrieve information, design, conduct, analyze and interpret results from experimental and clinical research.

2-6- Competency

Graduates will be able to perform pharmacoeconomic analysis and develop promotion, sales, marketing, and business administration skills.

This competency will be developed via the following key elements:

Key Elements

- 2.6.1 Utilize the basics of management, financial resources, business administration to ensure rational use of financial and human resources.
- 2.6.2 Apply the basis of sales, marketing, promotion and pharmacoeconomic analysis.

Domain 3: Pharmaceutical Care

3-1- Competency

Graduates will be able to apply the principles of body functions to participate to improve health care services using evidence-based information.

This competency will be developed via the following key elements:

Key Elements

- 3.1.1. Relate the normal and abnormal body function regarding its physiology, biochemistry, immunology and genetics to manage different disorders and diseases to improve health care services.
- 3.1.2. Monitor factors contributing in microbial contamination and methods for their control including sterilization as well as aseptic procedures.
- 3.1.3. Relate disease etiology, epidemiology, pathophysiology, clinical features, lab investigation and pharmacotherapy approaches based on recent international practice guidelines.
- 3.1.4. Develop infection control methods to improve the public health.
- 3.1.5. Utilize the basics of pharmacology and therapeutics to prepare a list of all possible therapeutic options for the management of various diseases and medical conditions.

- 3.1.6. Make necessary changes in therapeutic plan based on the clinical picture and lab investigations.
- 3.1.7. Apply preventive measures for different infections.
- 3.1.8. Perform different microbiological techniques and biochemical tests in order to identify and diagnose different infection/diseases.

3-2- Competency

Graduates will be able to provide counseling and education services to patients and communities about safe and rational use of medicines and medical devices.

This competency will be developed via the following key elements:

Key Elements

- 3.2.1. Correlate between information from other health professionals, medical records, pharmacy records, pharmacovigilance and appropriate medical literature to use this information to provide rational use of medication and medical devices.
- 3.2.2. Apply the pharmacological approaches of drugs including mechanism of action, medical use, dose, route of administration, side effect and contraindication.
- 3.2.3. Advise effectively the patient on dosage, food regimen, side effects of the drugs and drug interaction
- 3.2.4. Conduct patient counseling to teach the patients about their medications and medical devices.
- 3.2.5. Maintain public awareness on rational use of drugs, vaccination and drug abuse and misuse.
- 3.2.6. Analyze patient characteristic and designing cost effective therapeutic protocols.
- 3.2.7. Select a therapeutic plan for special patient population including pediatrics, geriatrics and pregnant women.
- 3.2.8. Use effectively the available drug information sources in answering drug information request.
- 3.2.9. Select appropriate OTC preparation based on patient symptoms and council patient, health care professionals on safe and proper use of drugs.

- 3.2.10. Use effectively herbal medicines, complementary, nutraceuticals and alternative medicine in the management of different diseases.
- 3.2.11. Apply drug information data to predict the toxicity of drugs and xenobiotics in order to identify source of toxicity and manage symptoms.

Domain 4: Personal Practice

4-1- Competency

Graduates will be able to express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.

This competency will be developed via the following key elements:

Key Elements

- 4.1.1. Demonstrate critical thinking, problem-solving, creativity, time management and decision-making abilities to evaluate team performance as well as team members.
- 4.1.2. Manipulate different and unexpected challenges to work smoothly and effectively individually and in a team.
- 4.1.3. Retrieve information; and set realistic targets and time plan to accomplish a required mission in deadlines.
- 4.1.4. Use the knowledge and basis of entrepreneurship, sales, marketing and management skills to creatively plan and conduct projects that simulate entrepreneurial environment.

4-2- Competency

Graduates will be able to effectively communicate verbally, non-verbally and in writing with patient and health care team.

This competency will be developed via the following key elements:

Key Elements

- 4.2.1. Show the ability to effectively present a topic of interest using recent technology.



- 4.2.2. Communicate clearly by verbal and written means with patients and members of healthcare society.

4-3- Competency

Graduates will be able to express self-awareness and be a life-long learner for continuous professional improvement.

This competency will be developed via the following key elements:

Key Elements

- 4.3.1. Collect and analyze information from different sources to determine self-merits/limitation improve personal and professional skills.
- 4.3.2. Track the continuous updates with respect to new regulation and guidelines.
- 4.3.3. Learn independently to develop professional skills.

National Academic Reference Standard (NARS):

1. Attributes of the Pharmacy Graduates

Pharmacy graduates work in a multi-disciplinary profession to improve the quality of life of individuals and communities. Based on multi-national requirements, the pharmacy graduate must develop competencies of a learner, health caregiver and provider, professional, collaborator, manager, promoter, problem solver, educator and communicator, self-aware, leader, and innovator. Pharmacy graduates must acquire the necessary attributes related to various pharmacy aspects including drug-oriented and patient-oriented pharmacy disciplines to actively participate in pharmaceutical care. Pharmacy graduate must be able to:

1. Educate and counsel individuals and communities to participate in optimizing therapeutic outcomes and minimizing the incidence of illness of individuals and populations.
2. Practice and perform responsibilities and authorities legally, professionally, and ethically respecting patients' rights.
3. Utilize evidence-based data to deliver contemporary pharmaceutical products and pharmacy services.
4. Assure the quality of pharmaceutical materials and products.
5. Apply integrated evidence-based pharmaceutical and clinical information in assessing the appropriateness, effectiveness, and safety of medications.
6. Contribute effectively in planning and conducting research using appropriate methodologies.
7. Work collaboratively and share therapeutic decision-making as a member of an inter-professional health care team.
8. Demonstrate effective communication, leadership, business administration, and entrepreneurial skills.
9. Work as a life-long learner for continuous professional improvement and demonstrate capabilities of performance appraisal and self-assessment.

2. Competencies of the Pharmacy Graduates

Four **Competency Domains** are included in these competency-based National Academic Reference Standards for Pharmacy Education. These domains are designed to cover all essentials for practicing pharmacy profession including both drug-oriented and patient-oriented disciplines. Each domain should be achieved through several **Competencies** ranging from one to six, with a total of twelve competencies for all domains. These competencies are overall broad statements that cover various areas of the graduate performance. A number of **Key Elements** ranging from two to seven are included in each competency, with a total of forty-two key elements for all competencies. These key elements demonstrate how pharmacy graduate will reflect each competency in practice. The competency domains are the followings:

Domain 1: Fundamental Knowledge

Domain 2: Professional and Ethical Practice

Domain 3: Pharmaceutical Care

Domain 4: Personal Practice

Domain 1- Fundamental Knowledge

1-1- Competency

Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.

Key Elements

1-1-1- Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.

1-1-2- Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.

1-1-3- Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.

1-1-4- Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate their appropriateness, effectiveness, and safety in individuals and populations.

1-1-5- Retrieve information from fundamental sciences to solve therapeutic problems.

1-1-6- Utilize scientific literature and collect and interpret information to enhance professional decision.

1-1-7- Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.

Domain 2: Professional and Ethical Practice

2-1- Competency

Work collaboratively as a member of an inter-professional health care team to improve the quality of life of individuals and communities, and respect patients' rights.

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.

2-1-2 Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.

2-1-3 Recognize own personal and professional limitations and accept the conditions of referral to or guidance from other members of the health care team.

2-2- Competency

Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.

Key Elements

2-2-1 Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/natural pharmaceutical materials.

2-2-2 Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.

2-2-3 Recognize the principles of various tools and instruments, and select the proper techniques for synthesis and analysis of different materials and production of pharmaceuticals.

2-2-4 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.

2-3- Competency

Handle and dispose biologicals and synthetic/natural pharmaceutical materials/products effectively and safely with respect to relevant laws and legislations.

Key Elements

2-3-1 Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical field.

2-3-2 Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.

2-4- Competency

Actively share professional decisions and proper actions to save patient's life in emergency situations including poisoning with various xenobiotics, and effectively work in forensic fields.

Key Elements

2-4-1 Ensure safe handling/use of poisons to avoid their harm to individuals and communities.

2-4-2 Demonstrate understanding of the first aid measures needed to save patient's life.

2-4-3 Take actions to solve any identified medicine-related and pharmaceutical care problems.

2-4-4 Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens.

2-5- Competency

Contribute in pharmaceutical research studies and clinical trials needed to authorize medicinal products.

Key Elements

2-5-1 Fulfill the requirements of the regulatory framework to authorize a medicinal product including quality, safety, and efficacy requirements.

2-5-2 Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession.

2-5-3 Contribute in planning and conducting research studies using appropriate methodologies.

2-6- Competency

Perform pharmacoeconomic analysis and develop promotion, sales, marketing, and business administration skills.

Key Elements

2-6-1 Apply the principles of business administration and management to ensure rational use of financial and human resources.

2-6-2 Utilize the principles of drug promotion, sales, marketing, accounting, and pharmacoeconomic analysis.

Domain 3: Pharmaceutical Care

3-1- Competency

Apply the principles of body functions to participate in improving health care services using evidence-based data.

Key Elements

3-1-1 Apply the principles of body function and basis of genomics in health and disease states to manage different diseases.

3-1-2 Apply the principles of public health and pharmaceutical microbiology to select and assess proper methods of infection control.

3-1-3 Monitor and control microbial growth and carry out laboratory tests for identification of infections/diseases.

3-1-4 Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutic approaches.

3-2- Competency

Provide counseling and education services to patients and communities about safe and rational use of medicines and medical devices.

Key Elements

3-2-1 Integrate the pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, adverse drug reactions and drug interactions.

3-2-2 Apply the principles of clinical pharmacology and pharmacovigilance for the rational use of medicines and medical devices.

3-2-3 Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.

3-2-4 Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.

3-2-5 Educate and counsel patients, other health care professionals, and communities about safe and proper use of medicines including OTC preparations and medical devices.

3-2-6 Maintain public awareness on social health hazards of drug misuse and abuse.

Domain 4: Personal Practice

4-1- Competency

Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.

Key Elements

4-1-1 Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.

4-1-2 Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.

4-1-3 Demonstrate creativity and apply entrepreneurial skills within a simulated entrepreneurial activity.

4-2- Competency

Effectively communicate verbally, non-verbally and in writing with individuals and communities.

Key Elements

4-2-1 Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care team, patients, and communities.

4-2-2 Use contemporary technologies and media to demonstrate effective presentation skills.



4-3- Competency

Express self-awareness and be a life-long learner for continuous professional improvement.

Key Elements

4-3-1 Perform self-assessment to enhance professional and personal competencies.

4-3-2 Practice independent learning needed for continuous professional development.

Coverage of National Academic Reference Standards by the Faculty of Pharmacy- program ILOs

1	Attributes of graduates	Program aims
	Pharmacy graduates work in a multi-disciplinary profession to improve the quality of life of individuals and communities. Based on multi-national requirements, the pharmacy graduate must develop competencies of a learner, health caregiver and provider, professional, collaborator, manager, promoter, problem solver, educator and communicator, self-aware, leader, and innovator. Pharmacy graduates must acquire the necessary attributes related to various pharmacy aspects including drug-oriented and patient-oriented pharmacy disciplines to actively participate in pharmaceutical care. Pharmacy graduate must be able to:	
<u>1.1</u>	Educate and counsel individuals and communities to participate in optimizing therapeutic outcomes and minimizing the incidence of illness of individuals and populations.	I.1, I.2,
<u>1.2</u>	Practice and perform responsibilities and authorities legally, professionally, and ethically respecting patients' rights.	I.13
<u>1.3</u>	Utilize evidence-based data to deliver contemporary pharmaceutical products and pharmacy services.	I.3, I.4, I.5
<u>1.4</u>	Assure the quality of pharmaceutical materials and products.	I.6
<u>1.5</u>	Apply integrated evidence-based pharmaceutical and clinical information in assessing the appropriateness, effectiveness, and safety of medications.	I.7, I.8
<u>1.6</u>	Contribute effectively in planning and conducting research using appropriate methodologies.	I.9
<u>1.7</u>	Work collaboratively and share therapeutic decision-making as a member of an inter-professional health care team.	I.12
<u>1.8</u>	Demonstrate effective communication, leadership, business administration, and entrepreneurial skills.	I.10, I.11
<u>1.9</u>	Work as a life-long learner for continuous professional improvement and demonstrate capabilities of performance appraisal and self-assessment.	I.14

DOMAIN 1- Fundamental Knowledge

NARS	Program Key Elements
1-1- COMPETENCY	
Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.	
KEY ELEMENTS	
1-1-1- Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	1.1.1, 1.1.5, 1.1.6
1-1-2- Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	1.1.6
1-1-3- Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.	1.1.2, 1.1.3, 1.1.4
1-1-4- Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate their appropriateness, effectiveness, and safety in individuals and populations.	1.1.5
1-1-5- Retrieve information from fundamental sciences to solve therapeutic problems.	1.1.5, 1.1.8
1-1-6- Utilize scientific literature and collect and interpret information to enhance professional decision.	1.1.9
1-1-7- Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.	1.1.7, 1.1.8

DOMAIN 2: Professional and Ethical Practice

NARS		Program Key Elements
2-1- Competency		
Work collaboratively as a member of an inter-professional health care team to improve the quality of life of individuals and communities, and respect patients' rights.		
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.		2.1.2
2-1-2 Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.		2.1.1
2-1-3 Recognize own personal and professional limitations and accept the conditions of referral to or guidance from other members of the health care team.		2.1.3
2-2- Competency		
Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.		
Key Elements		
2-2-1 Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/natural pharmaceutical materials.		2.2.1, 2.2.2
2-2-2 Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.		2.2.3, 2.2.4, 2.2.5, 2.2.6,
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, 2.2.2, 2.2.7, 2.2.8
2-2-4 Adopt the principles of pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and biopharmaceutics and their applications in new drug delivery systems, dose modification, bioequivalence studies, and pharmacy practice.		2.2.9, 2.2.10, 2.2.11, 2.2.12, 2.2.13, 2.2.14
2-3- Competency		
Handle and dispose biologicals and synthetic/natural pharmaceutical materials/products effectively and safely with respect to relevant laws and legislations.		
Key Elements		
2-3-1 Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical field.		2.3.1, 2.3.2

2-3-2 Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	2.3.2
2-4- Competency	
Actively share professional decisions and proper actions to save patient's life in emergency situations including poisoning with various xenobiotics, and effectively work in forensic fields.	
Key Elements	
2-4-1 Ensure safe handling/use of poisons to avoid their harm to individuals and communities.	2.4.1
2-4-2 Demonstrate understanding of the first aid measures needed to save patient's life.	2.4.2
2-4-3 Take actions to solve any identified medicine-related and pharmaceutical care problems.	2.4.3
2-4-4 Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens.	2.4.4, 2.4.5
2-5- Competency	
Contribute in pharmaceutical research studies and clinical trials needed to authorize medicinal products.	
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, 2.5.2
2-5-2 Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession.	2.5.3
2-5-3 Contribute in planning and conducting research studies using appropriate methodologies.	2.5.4
2-6- Competency	
Perform pharmacoeconomic analysis and develop promotion, sales, marketing, and business administration skills.	
Key Elements	
2-6-1 Apply the principles of business administration and management to ensure rational use of financial and human resources.	2.6.1
2-6-2 Utilize the principles of drug promotion, sales, marketing, accounting, and pharmacoeconomic analysis.	2.6.2

Domain 3: Pharmaceutical Care

NARS		Program Key Elements
3-1- Competency		
Apply the principles of body functions to participate in improving health care services using evidence-based data.		
Key Elements		
3-1-1 Apply the principles of body function and basis of genomics in health and disease states to manage different diseases.		3.1.1
3-1-2 Apply the principles of public health and pharmaceutical microbiology to select and assess proper methods of infection control.		3.1.2, 3.1.4
3-1-3 Monitor and control microbial growth and carry out laboratory tests for identification of infections/diseases.		3.1.7, 3.1.8
3-1-4 Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutic approaches.		3.1.3, 3.1.6
3-2- Competency		
Provide counseling and education services to patients and communities about safe and rational use of medicines and medical devices.		
Key Elements		
3-2-1 Integrate the pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, adverse drug reactions and drug interactions.		3.2.2, 3.2.3, 3.2.4
3-2-2 Apply the principles of clinical pharmacology and pharmacovigilance for the rational use of medicines and medical devices.		3.2.1, 3.2.2, 3.2.6
3-2-3 Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.		3.2.4, 3.2.10
3-2-4 Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.		3.2.11
3-2-5 Educate and counsel patients, other health care professionals, and communities about safe and proper use of medicines including OTC preparations and medical devices.		3.2.4, 3.2.9
3-2-6 Maintain public awareness on social health hazards of drug misuse and abuse.		3.2.5

Domain 4: Personal Practice

NARS		Program Key Elements
4-1- Competency		
Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.		
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, 4.1.2, 4.1.3,
4-1-2 Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.		4.1.1, 4.1.2, 4.1.3
4-1-3 Demonstrate creativity and apply entrepreneurial skills within a simulated entrepreneurial activity.		4.1.4
4-2- Competency		
Effectively communicate verbally, non-verbally and in writing with individuals and communities.		
Key Elements		
4-2-1 Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care team, patients, and communities.		4.2.2
4-2-2 Use contemporary technologies and media to demonstrate effective presentation skills.		4.2.1
4-3- Competency		
Express self-awareness and be a life-long learner for continuous professional improvement.		
Key Elements		
4-3-1 Perform self-assessment to enhance professional and personal competencies.		4.3.1
4-3-2 Practice independent learning needed for continuous professional development.		4.3.2, 4.3.3

Admission requirements

Applicants must meet all the conditions set by the Supreme Council of Universities. The transfer of students enrolled in a similar program in one of the faculties of pharmacy in Egyptian or foreign universities may be accepted provided that the student meets the admission requirements of the faculty. The courses he studied at the transferred faculty shall be calculated according to the rules determined by the faculty council.

Teaching and learning:

The teaching and learning approaches within this program were chosen to meet; stated learning objectives, including: Lectures, case studies, discussion, brain storming practical sessions, tutorials, field visits and summer training course. The details of Teaching and learning methods are mentioned in faculty teaching and learning strategy

Assessment:

Different assessment method are used within this program including

- Written examinations,
- Practical assessments
- Oral presentation.
- Course work assessments.

The final grade of the course consists of the sum of the semesters work (15%) + practical (25%) + written (50%) + oral (10%) as shown in the study plan tables.

The minimum pass rate in any course is 60% of the total grades of this course. The student will not be successful in any course unless he or she receive 30% of the final written exam score. The percentage of final scores and estimates is as shown in the following table.

Evaluation system

Percentage	Symbol	Number of Points	Grade
95 and above	A ⁺	4	Excellent
90 for less than 95	A	3.85	
85 for less than 90	A ⁻	3.7	
82.5 for less than 85	B ⁺	3.3	very good
77.5 for less than 82.5	B	3	
75 for less than 77.5	B ⁻	2.7	
72.5 for less than 75	C ⁺	2.3	Good
67.5 for less than 72.5	C	2	
65 for less than 67.5	C ⁻	1.7	
62.5 for less than 65	D ⁺	1.3	Acceptable
60 for less than 62.5	D	1	
Less than 60	F	0.00	Deposit
Withdrawal - W	W	-	Withdrawal
Incomplete - I *	I*	-	Incomplete
Absent - Abs E **	Abs E**	-	Absent

The student's GPA and CGPA are calculated as follows:

A- The points of each course are calculated according to the following equation:

$$\text{Course Points (CGP)} = (\text{Degree} - 60) \times 0.075 + 1$$

B - The value of points for each course is multiplied by the number of credit hours for this course to get the number of points for each course in the semester.

C - Points are collected for all the courses in which the student scored in one semester.

D- The total points of all courses shall be divided by the total credit hours registered for the student per semester for the purpose of obtaining the semester average as follows:

The semester rate (GPA) =

$$\frac{\text{Total points of all courses per semester}}{\text{Total credit hours registered per semester}}$$

The cumulative GPA is calculated as follows:

Cumulative Grade Point Average (cGPA) =

$$\frac{\text{The sum of points for all courses for all semesters}}{\text{Total credit hours registered for all semesters}}$$

Registration

The College assigns each group of students an academic adviser from the faculty who carries out the care and guidance tasks and is responsible for the student in the scientific, social and psychological affairs and guidance in all matters relating to his university life and helps students in the selection of courses from the list of courses offered by the college in each semester.



Each student must personally register the courses he / she wishes to study in each semester, with the need to choose the courses and the number of credit hours in consultation and agreement with the academic advisor. To be enrolled, the student must have successfully passed the registration requirement.

The College Council may, in cases of extreme necessity, register some courses in line with its requirements that the student has not successfully passed if the student's available study load is less than 12 credit hours , provided that a declaration is written by the student's parent. His success in this course will only be approved after passing the requirement for which he was allowed to register in parallel.

Academic stumbling

A student is considered academically stuttered if he / she receives a GPA less than 1. A student who obtains a GPA less than 1 for six consecutive semesters or in ten non-consecutive semesters shall be dismissed from the College after presentation and approval by the College Council. Summer semesters, if any, shall not be considered. A student who is in trouble is allowed to re-study the courses he / she passed with a grade D in order to improve the GPA and calculate the highest score obtained by the student.

Study Dropout

A student shall be deemed to have dropped out of school if he did not register in a semester or withdrew from the semester whether with or without an excuse. The student may interrupt a maximum of two consecutive semesters or three non-consecutive semesters, provided that he obtains the approval of the College Council. In case of interruption for a longer period of time without an excuse accepted by the College Council and approved by the University Council, the provisions of the Executive Regulations of the University Regulation Act shall apply.

Requirements for Bachelor of Pharmacy (Pharm D) (Clinical Pharmacy)

The Bachelor of Pharmacy (Pharm D) (Clinical Pharmacy) according to the credit hour system requires:

First: Study and pass 177 credit hours spread over ten semesters, in addition to the requirements of the University, provided that the cumulative average of not less than one.

Second: Passing a first field training period with a total of 100 actual training hours in private and government pharmacies and hospital pharmacies approved by the faculty council, under the supervision of a faculty member.

Training is done during the summer vacations for the years of study after the end of the third level and to complete the year of excellence (academic year - 9 months) after the completion of years of study, according to the detailed list of the internship year training program, which includes the graduation project in one of the disciplines offered.

Third: Passing the university's requirements for graduation, provided that it does not include the student's semester or CGPA calculation.

Fourth: Completing the sixth academic year of internship in the credited practice area according to the bylaw.

Curriculum Structure and Contents:

a- Program duration: 5 years + one academic year of internship.

b- Program structure:

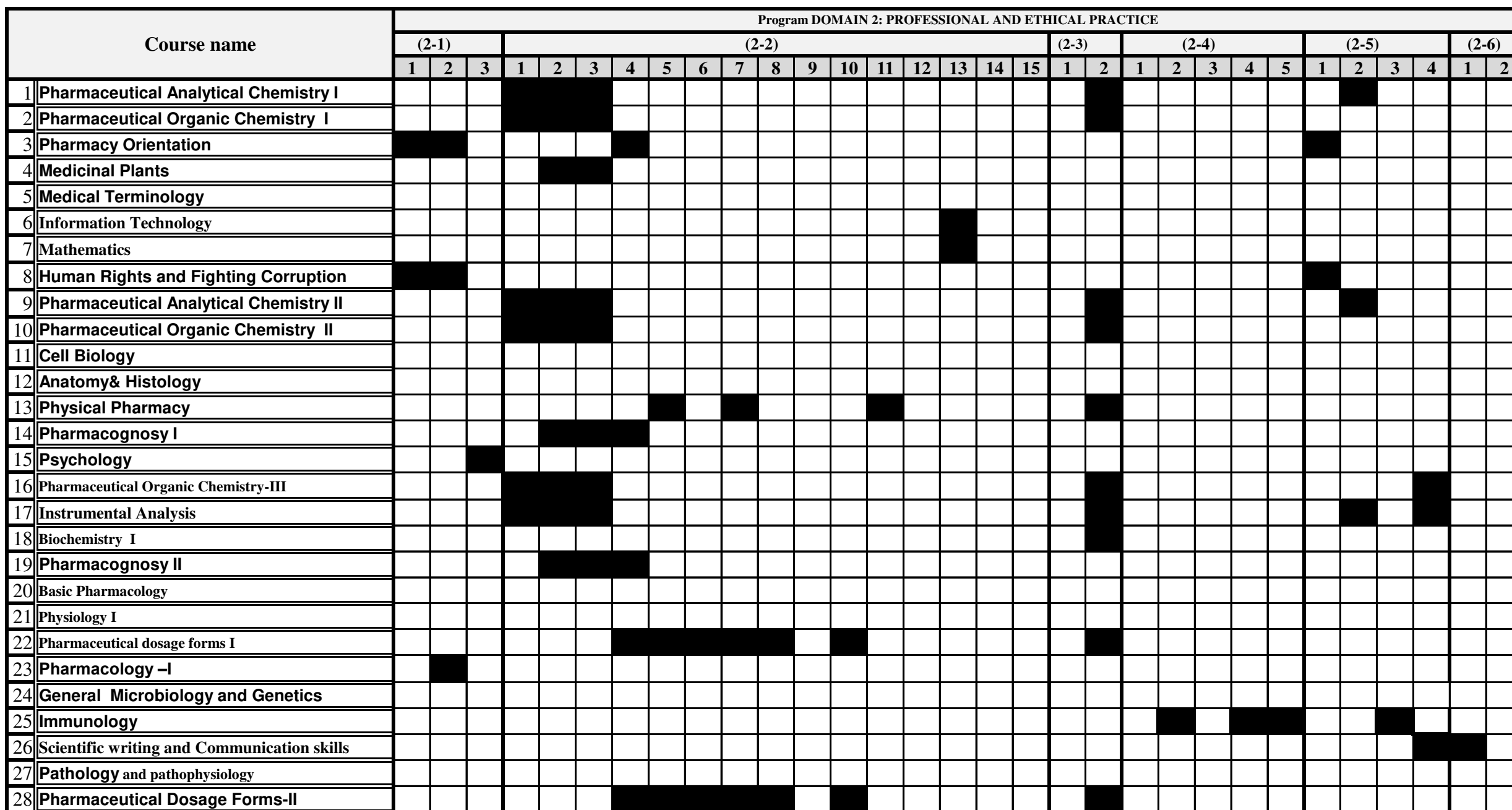
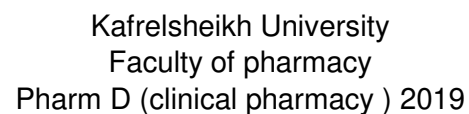
- i- No of study hours per 5 year: 177 hours
- ii- Practical field training: 100 hours summer training.
- iii- One academic year of internship.

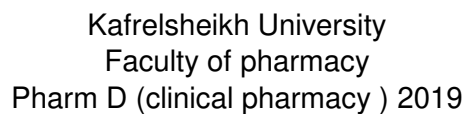


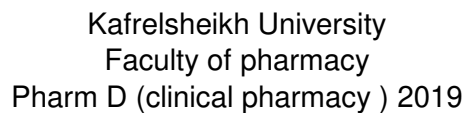


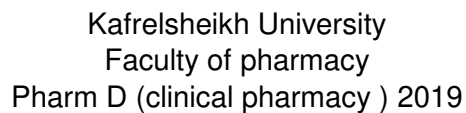
Course name		DOMAIN 1- FUNDAMENTAL KNOWLEDGE								
		(1-1)								
		1	2	3	4	5	6	7	8	9
1	Drug Design									
2	Advanced Pharmaceutical Analysis – Spectroscopy									
3	Complementary Therapies									
4	Production and Manufacture of Medicinal Plants									
5	Chromatography and Separation Techniques									
6	Applied Industrial Pharmacy									
7	Good Manufacturing Practices									
8	Antibiotic stewardship									
9	Infection Control									
10	Bioinformatics									
11	Cosmetic Preparations									
12	Biological Standardization									
13	Veterinary Pharmacology									
14	Geriatric pharmacotherapy									
15	Processing of medicinal plants									
16	Aromatherapy and herbal cosmetics									
17	Biotechnology of medicinal plants									
18	Veterinary pharmacy									
19	Interprofessional Skills									
20	Pharmacoeconomics									
21	Advanced pharmaceutical technology									
22	Medical devices									
23	Drug Metabolism and Transport									

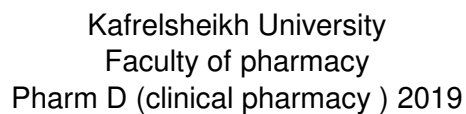
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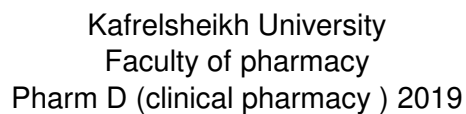


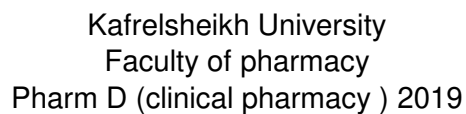
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