



توصيف برنامج بكالوريوس الصيدلة

(فارم دي - Pharm D)

طبقاً لنظام الساعات المعتمدة

كلية الصيدلة - جامعة كفر الشيخ

2019

Program Specification



A- Basic Information

1. **Program title:** Bachelor of Pharmacy (Pharm D.)
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:**



B- Professional Information:

1. Program Aims:

The program of aim to graduate a distinguished pharmacist qualified to work in public and private pharmacies, pharmaceutical factories and companies, pharmaceutical control laboratories, food analysis and work in the field of media, marketing, research and universities. This program also supports the role of pharmacists in multidisciplinary health teams.

Faculty of pharmacy Kafrelsheikh University provided the student with the following necessary attributes:

1. Safely and effectively deal with chemicals and pharmaceutical products in compliance with pharmacy law and legalizations.
2. Capable of formulating, preparing pharmaceutical products from natural/synthetic resources.
3. Share effectively in systems for dispensing, storage and distribution of medications.
4. Perform various qualitative and quantitative analytical techniques and fulfill criteria for both GLP and GMP to assure the quality of raw materials and pharmaceutical products.
5. Provide information and pharmacy services to community and patients about rational use of medications and medical devices.
6. Demonstrate general and therapeutic communication skills with colleagues, healthcare teams and patients.
7. Practice effective communication, leadership, business and entrepreneurial skills.
8. Demonstrate comprehensive knowledge about code of ethics and human rights.
9. Perform responsibilities in compliance with legal, ethical and professional rules.
10. Demonstrate an updated knowledge in the biology of microorganisms and their attribution to infectious diseases and apply this in research and practical work in controlling microbial infections, epidemiology and public health issues.
11. Have a recent knowledge in pharmacology, screening and bioassay of drugs as well as toxicology of xenobiotics



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12. Apply principal of pharmacology and toxicology in selecting appropriate drug for patients and share effectively in design of therapeutic protocols to each patient.
13. Be a life-long learner, creative researcher and effective participant in healthcare of the community, in addition to self-assessment for continuous development.
14. Participate in community service such as pharmacovigilance and share effectively in environmental development and provide a tangible economic return by rationalizing the use of medicines in hospitals.
15. Document medical order clearly and report medical interventions in patient file.



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 pharmaceutical care.

This competency will be developed through understanding the following key elements:

Key Elements

- 1-1-1 Principles of basic and applied pharmaceutical, clinical sciences and behavioral sciences as well as administrative sciences.
- 1-1-2 Communicate efficiently and effectively with other health care team using the proper pharmaceutical and medical terms, abbreviations and symbols.
- 1-1-3 Demonstrate different analytical techniques under good laboratory practice to validate and assure quality of pharmaceutical material and products.
- 1-1-4 Utilize information from basic science to handle, extract, isolate purify, identify and standardize natural and synthetic compounds.
- 1-1-5 Integrate knowledge from fundamental pharmaceutical and medical sciences to explain the drug mechanism of action and assess the efficacy and safety in patient and community.
- 1-1-6 Retrieve basic scientific drug information from different resources to manage different therapeutic issues and improve health care services.
- 1-1-7 Integrate information from different scientific resources on recent technologies that contribute to pharmaceutical industry.
- 1-1-8 Articulate and interpret information from different scientific literature to improve professional decision making skills.



- 1-1-9 Utilize Principles of pharmacokinetics and biopharmaceutics, including their importance in dosage form design, therapeutic drug monitoring, dosage tailoring and bioequivalence studies.

Domain 2: Professional and Ethical Practice

2-1- Competency

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

This competency will be developed via the following key elements:

Key Elements

- 2-1-1 Acquire ethical manners, Pharmacy legalization and follow general safety guidelines in pharmacy profession affairs.
- 2-1-2 Adopt laws related to pharmacy and medicines, ethics of health care, regulatory affairs and proper data documentation considering human rights.
- 2-1-3 Recognize self-professional limitations and accept criticism and guidance from other health care colleagues.

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 and medical devices.

This competency will be developed via the following key elements:

Key Elements

- 2-2-1 Design and formulate safe and effective pharmaceutical dosage forms and new drug delivery systems.
- 2-2-2 Predict chemical and physical interactions that contribute to drug binding including prerequisite reaction mechanisms.
- 2-2-3 Employ international guidelines of GMP, QC and QA in pharmaceutical manufacturing, drug distribution and storage taking in consideration incompatibility problems.



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- 2-2-4 Select and implement appropriate analytical methods required to confirm specifications of raw material (synthetic or natural) as well as pharmaceutical preparations.
- 2-2-5 Apply the knowledge of pharmaceutical chemistry to synthesize, identify, quantify and purify pharmaceutical compounds including prerequisite physical, analytical and organic chemistry technical skills.
- 2-2-6 Detect and deal with different types of incompatibilities including drug-drug and drug-excipient interaction during pre-formulation and formulation of different dosage forms as well as therapeutic incompatibilities.
- 2-2-7 Evaluate drug-induced disorders and drug interactions including food, disease or environmental interactions with various medicines.
- 2-2-8 Recognize proper methods for isolation, purification and identification of bioactive herbal products as well as standardization of herbal preparations.
- 2-2-9 Interpret the relation between physico-chemical properties, biological activity and other biological relationships with body receptors to develop pharmacologically active compounds using computer aided drug design tools.
- 2-2-10 Tailor and adjust dosage regimens depending on drug delivery, pharmacokinetic and clinical pharmacology rationale.
- 2-2-11 Apply the basis of pharmacoeconomic and Pharmacovigilance to achieve realistic economic parameters in pharmacy practice.
- 2-2-12 Apply the basis of herbal and alternative medicine including uses, dosage, safety and herbal medicines.
- 2-2-13 Apply the principles of different techniques to operate the pharmaceutical equipment and instruments.
- 2-2-14 Use the fundamentals of biological evaluation and methods of biostatistical analysis and pharmaceutical calculation.
- 2-2-15 Recognize hospital organization and drug distribution systems.
- 2-2-16 Dispense drugs in respect to basics of drug interaction, IV admixture and TPN
- 2-2-17 Adopt essential knowledge relevant to manufacturing of biotechnology products such as antibiotics, vaccines and hormones.



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 Handle and process chemicals, radiopharmaceuticals, biological products, experimental animals and specimens safely and effectively according to relevant laws and legislations.
- 2-3-2 Dispose chemicals, biological, microbiological and radiopharmaceutical products/waste safely to avoid the environmental hazards.

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 and evaluate different poisons based on laboratory investigations and professionally contribute in forensic teams.



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 Fulfill the rules of regulatory guidelines in pharmacy to obtain final product complying with the requirements of quality and safety.
- 2-5-2 Employ proper documentation and drug filing systems.
- 2-5-3 Interpret patient clinical data in order to select and provide optimal drug therapy.
- 2-5-4 Contribute in a research team in order to plan and carryout research studies using suitable methodologies.

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 Apply basic concepts of pharmacoeconomic and pharmacovigilance.
- 2-6-2 Utilize essential knowledge of pharmaceutical foundations management including drug promotion, sales and marketing as well as financial and human resources management.

Domain 3: Pharmaceutical Care

3-1- Competency

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

This competency will be developed via the following key elements:

Key Elements

- 3-1-1 Make use of the basis of human physiology and genetics to control different disorders and diseases in order to improve health care services.



- 3-1-2 Relate the clinical picture, laboratory diagnosis, treatment, prevention and control of infectious and parasitic diseases and other issues related to public health.
- 3-1-3 Employ the microbiological information in prevention and control of different types of infections in the community.
- 3-1-4 Perform laboratory tests of infectious /diseases, interpret laboratory reports and identify biomarkers needed to monitor, treat and/or prevent infectious/diseases.
- 3-1-5 Recognize etiology, epidemiology and pathophysiology of infectious and non-infectious diseases based on knowledge of genetics and medical sciences.

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 Apply drug information data to advice and educate patients and individuals about the toxicity of drugs and xenobiotics including identification of the source of toxicity and symptoms management.
- 3-2-2 Integrate pharmacological profile of medicines including mechanism of action, uses, dosing, contraindications, adverse reactions and interactions of medicines.
- 3-2-3 Apply the principles of pharmacovigilance and clinical pharmacology approaches including the pharmacological profile of drugs in geriatric, pediatric, special population and pregnant women for rational use of medicines and medical devices.
- 3-2-4 Solve cases related to community pharmacy and public awareness on professional use of drugs, drug abuse and misuse.
- 3-2-5 Relate core knowledge of practicing pharmacy including basics of drug information services, proper documentation, drug dispensing and medication errors.
- 3-2-6 Use effectively herbal medicines, complementary, nutraceuticals and alternative medicine in the management of different diseases.



- 3-2-7 Select appropriate OTC preparation based on patient symptoms, and conduct counseling for patients, health care and other medical care professionals on safe and proper use of drugs and medical devices.

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 individuals and communities.

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 technologies.



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/ limitations and improve professional and personal skills.
- 4-3-2 Track the continuous updates with respect to new guidelines and regulations that are recently introduced.
- 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.



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 pharmaco-economic 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 pharmaco-economic 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.	3, 6, 9
<u>1.2</u>	Practice and perform responsibilities and authorities legally, professionally, and ethically respecting patients' rights.	1, 11, 12
<u>1.3</u>	Utilize evidence-based data to deliver contemporary pharmaceutical products and pharmacy services.	6, 19
<u>1.4</u>	Assure the quality of pharmaceutical materials and products.	5
<u>1.5</u>	Apply integrated evidence-based pharmaceutical and clinical information in assessing the appropriateness, effectiveness, and safety of medications.	16, 17, 20
<u>1.6</u>	Contribute effectively in planning and conducting research using appropriate methodologies.	4, 5, 14, 18
<u>1.7</u>	Work collaboratively and share therapeutic decision-making as a member of an inter-professional health care team.	9, 10
<u>1.8</u>	Demonstrate effective communication, leadership, business administration, and entrepreneurial skills.	10
<u>1.9</u>	Work as a life-long learner for continuous professional improvement and demonstrate capabilities of performance appraisal and self-assessment.	18



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
1-1-2- Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	1-1-2
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, 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.	1-1-6
1-1-6- Utilize scientific literature and collect and interpret information to enhance professional decision.	1-1-8
1-1-7- Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.	1-1-6, 1-1-7

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.	2-1-1
2-1-2 Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.	2-1-2
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.	2-2-5, 2-2-8, 2-2-9
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, 2-2-6, 2-2-15, 2-2-17
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, 2-2-5, 2-2-13
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.	2-2-7, 2-2-10, 2-2-11, 2-2-12, 1-1-14
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



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2-3-2 Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	2-3-1, 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.	2-4-2, 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
2-6-2 Utilize the principles of drug promotion, sales, marketing, accounting, and pharmacoeconomic analysis.	2-6-1, 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
3-1-3 Monitor and control microbial growth and carry out laboratory tests for identification of infections/diseases.	3-1-3, 3-1-4
3-1-4 Relate etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutic approaches.	3-1-4, 3-1-5
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, contraindications, adverse drug reactions and drug interactions.	3-2-2, 3-2-3
3-2-2 Apply the principles of clinical pharmacology and pharmacovigilance for the rational use of medicines and medical devices.	3-2-3
3-2-3 Provide evidence-based information about safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.	3-2-6, 3-2-7
3-2-4 Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.	3-2-1
3-2-5 Educate and counsel patients, other health care professionals, and communities about safe and proper use of medicines including OTC preparations and medical devices.	3-2-7, 3-2-8
3-2-6 Maintain public awareness on social health hazards of drug misuse and abuse.	3-2-4

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



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.
- Semester work.

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.



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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



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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) =

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

Program admission requirements:

General High School Certificate with major in biology and chemistry, or an equivalent certificate from a foreign institute recognized by the Supreme Council of Universities.

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



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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.

Requirements for Bachelor of Pharmacy (Pharm D)

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

First: Study and pass 175 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: 175 hours

ii- Practical field training: 100 hours summer training.

iii- One academic year of internship.



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Course name		Program DOMAIN 1 (FUNDAMENTAL KNOWLEDGE)								
		COMPETENCY (1-1)								
		1	2	3	4	5	6	7	8	9
1	Pharmaceutical Analytical Chemistry I									
2	Pharmaceutical Organic Chemistry I									
3	Pharmacy Orientation									
4	Medicinal Plants									
5	Medical Terminology									
6	Information Technology									
7	Mathematics									
8	Human Rights and Fighting Corruption (UR)									
9	Pharmaceutical Analytical Chemistry II									
10	Pharmaceutical Organic Chemistry II									
11	Cell Biology									
12	Anatomy & Histology									
13	Physical Pharmacy									
14	Pharmacognosy I									
15	Psychology									
16	Pharmaceutical Analytical Chemistry III									
17	Pharmaceutical Organic Chemistry III									
18	Scientific Writing									
19	Pharmacognosy II									
20	Physiology I									
21	Pharmaceutics I									
22	Biochemistry I									
23	General Microbiology and Genetics									
24	Immunology									



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Course name		Program DOMAIN 1 (FUNDAMENTAL KNOWLEDGE)								
		COMPETENCY (1-1)								
		1	2	3	4	5	6	7	8	9
25	Instrumental Analysis									
26	Pathology and Pathophysiology									
27	Pharmaceutics II									
28	Communication skills									
29	Physiology II									
30	Biochemistry II									
31	Pharmaceutical Microbiology									
32	Phytochemistry I									
33	Pharmaceutics III									
34	Medicinal Chemistry I									
35	Pharmacology I									
36	Biostatistics									
37	Parasitology and Virology									
38	Biopharmaceutics and Pharmacokinetics									
39	Phytochemistry II									
40	Pharmaceutics IV									
41	Pharmacology II									
42	Medicinal Chemistry II									
43	Medical Microbiology									
44	Pharmacology III									
45	Applied & Forensic Pharmacognosy									
46	Medicinal Chemistry III									
47	Clinical Biochemistry									
49	Pharmaceutical Technology I									
50	Pharmaceutical Legislations and Regulatory Affairs									
51	Clinical Pharmacokinetics									



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Course name		Program DOMAIN 1 (FUNDAMENTAL KNOWLEDGE)								
		COMPETENCY (1-1)								
		1	2	3	4	5	6	7	8	9
52	Drug Information									
53	Basic & Clinical Toxicology									
54	Hospital Pharmacy									
55	Pharmaceutical Technology II									
56	Community Pharmacy Practice									
57	Drug Design									
58	Biotechnology									
59	Clinical pharmacy I									
60	Public Health									
61	Phytotherapy and Aromatherapy									
62	Good Manufacturing Practice									
63	Marketing & Pharmacoeconomics									
64	First Aid									
65	Quality Control of Pharmaceuticals									
66	Drug interaction									
67	Advanced Drug Delivery Systems									
68	Clinical Pharmacy II & Pharmacotherapeutics									
69	Entrepreneurship									
70	Clinical Research, Pharmacoepidemiology and & Pharmacovigilance									
71	Professional Ethics									
Elective course										
1	Advanced Pharmaceutical Analysis - Spectroscopy									
2	Alternative Medicinal Therapies									
3	Production and Manufacture of Medicinal plants									
4	Chromatography and Separation Techniques									



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Course name		Program DOMAIN 1 (FUNDAMENTAL KNOWLEDGE)								
		COMPETENCY (1-1)								
		1	2	3	4	5	6	7	8	9
5	Applied Industrial Pharmacy									
6	Clinical nutrition									
7	Cosmetic Preparations									
8	Biological Standardization									
9	Veterinary Pharmacology									
10	Antimicrobial stewardship									
11	Infection Control									
12	Bioinformatics									



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Course name	Program Domain 3 (Pharmaceutical Care)											
	(3-1)					(3-2)						
	1	2	3	4	5	1	2	3	4	5	6	7
1 Pharmaceutical Analytical Chemistry I												
2 Pharmaceutical Organic Chemistry I												
3 Pharmacy Orientation						■			■	■		■
4 Medicinal Plants												
5 Medical Terminology												
6 Information Technology										■		
7 Mathematics												
8 Human Rights and Fighting Corruption (UR)												
9 Pharmaceutical Analytical Chemistry II												
10 Pharmaceutical Organic Chemistry II												
11 Cell Biology												
12 Anatomy & Histology												
13 Physical Pharmacy												
14 Pharmacognosy I											■	
15 Psychology												
16 Pharmaceutical Analytical Chemistry III												
17 Pharmaceutical Organic Chemistry III												
18 Scientific Writing												
19 Pharmacognosy II											■	
20 Physiology I	■											
21 Pharmaceutics I												
22 Biochemistry I												
23 General Microbiology and Genetics	■		■		■							
24 Immunology	■	■		■	■	■						



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Course name	Program Domain 3 (Pharmaceutical Care)											
	(3-1)					(3-2)						
	1	2	3	4	5	1	2	3	4	5	6	7
25 Instrumental Analysis												
26 Pathology and Pathophysiology												
27 Pharmaceutics II												
28 Communication skills												
29 Physiology II												
30 Biochemistry II												
31 Pharmaceutical Microbiology												
32 Phytochemistry I												
33 Pharmaceutics III												
34 Medicinal Chemistry I												
35 Pharmacology I												
36 Biostatistics												
37 Parasitology and Virology												
38 Biopharmaceutics and Pharmacokinetics												
39 Phytochemistry II												
40 Pharmaceutics IV												
41 Pharmacology II												
42 Medicinal Chemistry II												
43 Medical Microbiology												
44 Pharmacology III												
45 Applied & Forensic Pharmacognosy												
46 Medicinal Chemistry III												
47 Clinical Biochemistry												
49 Pharmaceutical Technology I												
50 Pharmaceutical Legislations and Regulatory Affairs												
51 Clinical Pharmacokinetics												
52 Drug Information												



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Course name		Program Domain 3 (Pharmaceutical Care)											
		(3-1)					(3-2)						
		1	2	3	4	5	1	2	3	4	5	6	7
53	Basic & Clinical Toxicology						■			■			
54	Hospital Pharmacy										■		
55	Pharmaceutical Technology II												
56	Community Pharmacy Practice									■	■		■
57	Drug Design												
58	Biotechnology												
59	Clinical pharmacy I		■		■			■			■		■
60	Public Health		■	■	■	■	■		■	■			
61	Phytotherapy and Aromatherapy							■				■	■
62	Good Manufacturing Practice												
63	Marketing & Pharmacoconomics												
64	First Aid												
65	Quality Control of Pharmaceuticals												
66	Drug interaction							■			■		
67	Advanced Drug Delivery Systems												
68	Clinical Pharmacy II & Pharmacotherapeutics		■		■				■				■
69	Entrepreneurship												
70	Clinical Research, Pharmacoepidemiology and & Pharmacovigilance					■		■			■		
71	Professional Ethics												
Elective course													
1	Advanced Pharmaceutical Analysis - Spectroscopy												
2	Alternative Medicinal Therapies							■				■	■
3	Production and Manufacture of Medicinal plants												
4	Chromatography and Separation Techniques												
5	Applied Industrial Pharmacy												
6	Clinical nutrition	■											



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Course name	Program Domain 3 (Pharmaceutical Care)											
	(3-1)					(3-2)						
	1	2	3	4	5	1	2	3	4	5	6	7
7 Cosmetic Preparations												
8 Biological Standardization												
9 Veterinary Pharmacology												
10 Antimicrobial stewardship												
11 Infection Control												
12 Bioinformatics												



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Course name		Program Domain 4 (Personal Practice)								
		(4-1)				(4-2)		(4-3)		
		1	2	3	4	1	2	1	2	3
1	Pharmaceutical Analytical Chemistry I									
2	Pharmaceutical Organic Chemistry I									
3	Pharmacy Orientation									
4	Medicinal Plants									
5	Medical Terminology									
6	Information Technology									
7	Mathematics									
8	Human Rights and Fighting Corruption (UR)									
9	Pharmaceutical Analytical Chemistry II									
10	Pharmaceutical Organic Chemistry II									
11	Cell Biology									
12	Anatomy & Histology									
13	Physical Pharmacy									
14	Pharmacognosy I									
15	Psychology									
16	Pharmaceutical Analytical Chemistry III									
17	Pharmaceutical Organic Chemistry III									
18	Scientific Writing									
19	Pharmacognosy II									
20	Physiology I									
21	Pharmaceutics I									
22	Biochemistry I									
23	General Microbiology and Genetics									
24	Immunology									



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Course name	Program Domain 4 (Personal Practice)								
	(4-1)				(4-2)		(4-3)		
	1	2	3	4	1	2	1	2	3
25 Instrumental Analysis									
26 Pathology and Pathophysiology									
27 Pharmaceutics II									
28 Communication skills									
29 Physiology II									
30 Biochemistry II									
31 Pharmaceutical Microbiology									
32 Phytochemistry I									
33 Pharmaceutics III									
34 Medicinal Chemistry I									
35 Pharmacology I									
36 Biostatistics									
37 Parasitology and Virology									
38 Biopharmaceutics and Pharmacokinetics									
39 Phytochemistry II									
40 Pharmaceutics IV									
41 Pharmacology II									
42 Medicinal Chemistry II									
43 Medical Microbiology									
44 Pharmacology III									
45 Applied & Forensic Pharmacognosy									
46 Medicinal Chemistry III									
47 Clinical Biochemistry									
49 Pharmaceutical Technology I									
50 Pharmaceutical Legislations and Regulatory Affairs									
51 Clinical Pharmacokinetics									
52 Drug Information									



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Course name		Program Domain 4 (Personal Practice)								
		(4-1)				(4-2)		(4-3)		
		1	2	3	4	1	2	1	2	3
53	Basic & Clinical Toxicology									
54	Hospital Pharmacy									
55	Pharmaceutical Technology II									
56	Community Pharmacy Practice									
57	Drug Design									
58	Biotechnology									
59	Clinical pharmacy I									
60	Public Health									
61	Phytotherapy and Aromatherapy									
62	Good Manufacturing Practice									
63	Marketing & Pharmacoconomics									
64	First Aid									
65	Quality Control of Pharmaceuticals									
66	Drug interaction									
67	Advanced Drug Delivery Systems									
68	Clinical Pharmacy II & Pharmacotherapeutics									
69	Entrepreneurship									
70	Clinical Research, Pharmacoepidemiology and & Pharmacovigilance									
71	Professional Ethics									
Elective course										
1	Advanced Pharmaceutical Analysis - Spectroscopy									
2	Alternative Medicinal Therapies									
3	Production and Manufacture of Medicinal plants									
4	Chromatography and Separation Techniques									
5	Applied Industrial Pharmacy									
6	Clinical nutrition									



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Course name	Program Domain 4 (Personal Practice)								
	(4-1)				(4-2)		(4-3)		
	1	2	3	4	1	2	1	2	3
7 Cosmetic Preparations									
8 Biological Standardization									
9 Veterinary Pharmacology									
10 Antimicrobial stewardship									
11 Infection Control									
12 Bioinformatics									