توصيف برنامج مرحلة البكالوريوس

(لائحة 2016)

كلية الصيدلة

جامعة كفرالشيخ

Program Specification


Faculty of Pharmacy and Pharmaceutical Manufacturing
KFS UNIVERSITY

University: Kafrelsheikh **Faculty: Pharmacy**

Program Specifications

A- Basic Information

1. ***Programme title:*** Bachelor degree In Pharmacy (BSc. Pharm.)
2. ***Program type:*** Single
3. ***Faculty:*** Faculty of Pharmacy, Kafrelsheikh University.
4. ***Departments:***
    1. Department of Pharmaceutical Chemistry
    2. Department of Pharmaceutical Analytical Chemistry
    3. Department of Biochemistry
    4. Department of Pharmaceutical Technology
    5. Department of Pharmacognosy
    6. Department of Microbiology and Immunology
    7. Department of Pharmacology & Toxicology
    8. Department of Clinical Pharmacy.

5- Coordinator: Prof. Dr. Ramadan Ahmed El- domany

6- External evaluation: Prof. Dr. Mahmoud Bakr Elashmawy

7- Program approval date: 09/2017

B- Professional Information:

1. ***Program Aims:***

The aim of this program is to prepare graduates with attributes described in the National Academic Reference Standards (NARS). In order to achieve this aim, the following objectives have to be fulfilled:

1. Safely and effectively handle chemicals and pharmaceutical products taking into consideration pharmacy law and legalizations.
2. Formulate and prepare pharmaceutical products from different sources and participate in systems for dispensing, storing, and distribution of medications.
3. Perform various qualitative and quantitative analytical techniques and fulfill criteria for both GLP and GMP to assure the quality of raw materials, procedures and pharmaceutical products.
4. Provide information and education services to community and patients about rational use of medications and medical devices.
5. Comprehend pathophysiology of diseases and participate in health care team in order to provide the community with sufficient health care and raise their public health concepts.
6. Work in hospitals, cancer units, pharmacy, forensic medicine field, industrial, research institutes and biochemical laboratories
7. Demonstrate capability of communication skills, time management, critical thinking, problem solving, decision-making, team-working, marketing, promotion, business and computation and numeric skills.
8. Perform responsibilities in compliance with legal, ethical and professional rules.
9. Have practical and theoretical knowledge of drug design, SAR and other aspects of pharmaceutical chemistry.
10. Give 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 knowledge and skills in pharmacology, screening and bioassay of drugs as well as toxicology of xenobiotics.

12. Be a life-long learner, creative researcher and effective participant in healthcare of the community.
13. Emphasize knowledge and skills in fields of immunology and biotechnology that are important for the competitiveness of the graduates in the job market.

2. ***Intended learning outcomes (ILOs):***

a) Knowledge and Understanding:

Student will acquire in-depth knowledge and understanding on:

A1- Principles of physical, chemical, biological, social, behavioral and environmental sciences that are necessary to prepare student to study applied pharmaceutical sciences

A2- Physico-chemical specifications of raw materials used in medicine preparation including inactive and active ingredients as well as biotechnology and radio-labeled products.

A3- Analytical methods including principles, procedures, development, validation and applications under good laboratory practice.

A4-Basic methods of extraction, isolation, purification, identification and standardization of pharmaceutical compounds.

A5- The structure activity relationship of different molecules that approach drug design and discovery.

A6- The knowledge of organic chemistry that is required for the synthesis of pharmacologically active compounds.

A7-Basis of pre-formulation, stability and formulation of different pharmaceutical dosage forms as well as drug delivery systems.

A8-Basis of configuration, function and operation of equipment used in pharmaceutical industry.

A9-Different techniques in pharmaceutical processes including manufacturing, packaging, labeling, storage and distribution of pharmaceutical products.

A10-Principles of pharmacokinetics and bio-pharmaceutics, including their importance in dosage form design, therapeutic drug monitoring, dosage tailoring and bioequivalence studies.

A11- Principles of hospital pharmacy including dispensing, distribution, patient profiles, adverse effects and reporting as well as counseling of in/outpatient and medical staff members.

A12-Principles of total parentral nutrition and I.V. admixtures and use of medical devices.

A13-Basis of general and pharmaceutical microbiology including different types of micro-organisms, sources of microbial contamination, types of biocides and disinfectants methods of sterilization and microbiological quality control of pharmaceutical products.

A14-Basic knowledge of medical sciences relevant to pharmacy practice and pharmaceutical sciences such as anatomy, physiology, histology of human body as well as etiology and epidemiology of diseases.

A15- Knowledge of different metabolic pathways of macro and micro molecules in the healthy state including steps and regulatory mechanism of these pathways and the related clinical disorders.

A16-Understanding the clinical picture, laboratory diagnosis, treatment, prevention and control of infectious and parasitic diseases and other issues related to public health.

A17-Basics of molecular biology and its applications in pharmaceutical field.

A18- Pharmacological profile of medicines including mechanism of action, dosing, adverse reactions and interactions of medicines.

A19 –Introductory knowledge for practicing pharmacy including basics of drug information services, proper documentation, filing systems, information about medication errors.

A20-Basis of herbal and alternative medicine including uses, dosage, safety and manufacture of herbal medicines.

A21- Useful knowledge in dealing with poisoning conditions including toxicology of various drugs, gases, heavy metals, and poisons from plant and animal origin.

A22-Biological evaluation, screening of drugs and methods of biostatistical analysis and pharmaceutical calculation.

A23-Knowledges that are important for management of pharmaceutical institutions including promotion, sales and marketing of medicines

A24- The laws related to pharmacy and medicines, ethics of health care, regulatory affairs and proper documentation.

A25-Principles of immunological response to xenobiotics and pathogens, including concepts of vaccination and treatment of immunological disorders.

A26-Basis of clinical pharmacology, therapeutics and rational use of drugs.

A27- Necessary theoretical background in first aid such as principles of wound fractures, burns, Dehydration and other ambulatory situations.

A28. Certain knowledge relevant to manufacturing of biotechnology products such as antibiotics, Vaccines and hormones.

A29. Basic concepts of Pharmacoeconomics and pharmacovigilance.

A30. Basic concepts of accreditation in health care facilities.

B) Intellectual Skills:

By the end of this program the graduate will be able to:

B1-Design and formulate safe and effective pharmaceutical dosage forms and new drug delivery systems.

B2- Convert chemical structures of drugs and its chemical precursors to names according to IUPAC and other systems.

B3- Predict chemical and physical interactions that contribute to drug binding including prerequisite reaction mechanisms.

B4-Utilize statistical data of biological and chemical experiments to evaluate quality and benefits of drugs.

B5- Utilize principles of therapeutics such as disease etiology, patho-physiology, investigation and prognosis in selection of suitable medication in disease management.

B6-Tailor and adjust dosage regimens depending on pharmacokinetic and clinical pharmacology rationale.

B7-Evaluate drug-induced disorders and drug interactions including food, disease or environmental interactions with various medicines.

B8-Assess basic medical and pharmaceutical information to be applied in different situations related to pharmacy practice.

B9-Employ international guidelines of GMP, QC and QA in pharmaceutical manufacturing, drug distribution and storage.

B10- Select appropriate analytical methods required to confirm specifications of raw material (synthetic or natural) as well as pharmaceutical preparations.

B11-Apply the knowledge of organic chemistry in drug synthesis and selection of appropriate synthetic strategies.

B12-Assess 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.

B13-Utilize proper methods for isolation, purification and identification of bioactive herbal products as well as standardization of herbal preparations.

B14-Utilize the microbiological information in prevention and control of different types of infections in the community.

B15-Interpret the relation between physico-chemical properties, biological activity and other biological relationships with body receptors to develop pharmacologically active compounds using computer aided tools in drug design.

B16-Interpret experimental results obtained from qualitative and quantitative analysis with subsequent assessment.

B17-Utilize the knowledge of different immune responses to xenobiotics in vaccine production.

B18- Utilize physical pharmacy principles in pre-formulation and pharmaceutical analysis.

B19- Apply the basis of pharmacoeconomics and Pharmacovigilance to achieve realistic economic Parameters in pharmacy practice.

B20- Apply knowledge of genetics and industrial microbiology in biotechnology.

C) Professional and Practical Skills:

By the end of this program the graduates will be able to:

C1-Use the proper pharmaceutical, medical terms, abbreviations and symbols efficiently and effectively with patient and other health care professionals.

C2-Handle chemicals, biological products, experimental animals and specimens safely and effectively.

C3-Dispose chemicals, biological, microbiological and pharmaceutical waste safely and enforce environmental protection.

C4-Correct use of pharmaceutical material in dosage form preparation and their labeling, packaging, storing, and distribution.

C5-Extract, isolate, purify and standardize herbal preparations.

C6-Synthesize, identify, quantify and purify pharmaceutical compounds including pre-requisite physical, analytical and organic chemistry technical skills.

C7-Analyze patient demographic data in order to select and provide optimal drug therapy.

C8- Relate the etiology and pathophysiology of infectious diseases and non-infectious diseases for proper medicine selection.

C9-Perform laboratory tests of infectious diseases and how to prevent and control microbial infection.

C10-Conduct laboratory investigations for diagnosis and monitoring of non-infectious diseases.

C11-Examine toxicity profiles of different xenobiotics and test poisons in biological specimens.

C12-Distinguish different types of microorganisms and demonstrate the microbial growth.

C13-Apply and implement techniques used in operating pharmaceutical equipment and instruments.

C14-Solve cases related to community pharmacy and public awareness on professional use of drugs, drug abuse and misuse.

C15-Apply therapeutic intervention in co-ordination with health care teams and pharmaceutical care.

C16-Conduct and perform pharmaceutical research, analyze data and utilize results.

C17- Make use of appropriate documentation and drug filing systems.

C18- Carryout QC & QA for different pharmaceutical compounds and dosage forms.

C19- Extract and identify microbiological components.

C20. Apply knowledge of first aids and maintain awareness about general social health hazards.

C21. Use effectively concepts of pharmacovigilance to report post-marketing adverse drug reactions.

D) General and Transferable Skills:

The graduate must be able to:

D1-Interact and communicate by verbal and written means with other health care professionals.

D2-appraise interpretation, documentation and presentation of pharmaceutical information in different pharmacy practice sittings efficiently and effectively.

D3-Demonstrate the ability to work effectively as a part of a team in diverse pharmaceutical and social sittings.

D4- Categorize various biological statistics in different fields of pharmacy.

D5- implement proper mathematical calculations in relevant pharmaceutical areas.

D6- Keep up with recent updates in pharmacy profession and pharmaceutical industry as a life - long independent continuing education post-graduation.

D7-Acquire ethical manners, Pharmacy legalization and follow general safety guidelines in pharmacy profession affairs.

D8-Acquire skills for creativity, critical thinking, problem solving, decision making and time management skills.

D9-Perform internet and digital searches to develop information technology skills and knowing how to retrieve information from a variety of sources.

D10-Retrieve the necessary skills for pharmaceutical institutions including promotion, sales and marketing as well as financial management.

D11- Plan and implement efficiently and effectively, in different settings contributing to Organization.

D12. Implement continuous quality improvement and basics of accreditation in different health care

Facilities.

D13. Communicate with medical staff about post marketing adverse drug reactions.

able to

3- National Academic Reference Standard (NARS – version 2009)

1. Attributes of the Graduates

Pharmacy graduates work in a multi-disciplinary profession and must acquire the necessary attributes in various pharmacy aspects for pursuing their career. They should demonstrate comprehensive knowledge, clear understanding and outstanding skills as follows:

1.1. Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations.

1.2. Capable of formulating, preparing pharmaceutical products from different sources and participating in systems for dispensing storage and distribution of medications.

1.3. Perform various qualitative and quantitative analytical techniques and fulfill criteria of GLP nod GPMP to assure the quality of raw materials, procedures and pharmaceutical products.

1.4. Provide information and education services to community and patients about rational use of medications and medical devices.

1.5. Comprehend principles of pathophysiology of diseases and participate with other health care professionals in improving health care services using evidence-based data.

1.6. Plan, design and conduct research using appropriate methodologies.

1.7. Develop presentation, promotion, marketing, business administration, numeric and computation skills.

1.8. Demonstrate capability of communication skills, time management, critical thinking, problem solving, decision-making and team working.

1.9. Perform responsibilities in compliance with legal, ethical and professional rules.

1.10. Able to be a life-long learner for continuous improvement of professional knowledge and skills.

2- Knowledge and Understanding:

2.1. Principles of basics, pharmaceutical, medical, social, behavioral, management, health and environmental science as well as pharmacy practice

2.2. Physicochemical properties of various substances used in preparation of medicines including inactive and active ingredient as well as biotechnology and radio-labelled products.

2.3. Principles of different analytical techniques using GLP guidelines and validation procedure.

2.4. Principles of isolation, synthesis, purification, identification and standardization methods of pharmaceutical products.

2.5. Principles of drug design, development and synthesis.

2.6. Properties of different pharmaceutical dosage form including novel drug delivery systems.

2.7. Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.

2.8. Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose modification and bioequivalence study.

2.9. Principles of hospital pharmacy including I.V. admixture, TPN and drug distribution system.

2.10. Principles of public health issues including sources and control of microbial contamination as well as sanitation, disinfection, sterilization methods and microbiological QC of pharmaceutical products.

2.11. Principles of body functions in health and disease states as well as basis of genomic and different biochemical pathways regarding their different correlation with different diseases.

2.12. Etiology, epidemiology and laboratory diagnosis and clinical features of different disease and their pharmacotherapeutics approaches.

2.13. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contraindications, ADRs, and drug interactions.

2.14. Principles of clinical pharmacology, pharmacovigilance and rational use of the drugs.

2.15. Basis of complementary and alternative medicine.

2.16. Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.

2.17. Methods of biostatistical analysis and pharmaceutical calculations.

2.18. Principles of management including financial and human resources.

2.19. Principles of drug promotion, sales and marketing, business administration, accounting and pharmacoeconomics.

2.20. Principles of proper documentation and drug filing systems.

2.21. Regulatory affairs, pharmacy laws and ethics of health care and pharmacy profession.

3- Professional and Practical Skills:

3.1. Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.

3.2. Handle and dispose chemicals and pharmaceutical preparation safely.

3.3. Compound, dispense, label, store and distribute medicines effectively and safely.

3.4. Extract, isolate, synthesize, purify, identify, and / or standardize active substances from different origin.

3.5. Select medicines based on understanding of etiology and pathophysiology of disease.

3.6. Monitor and control microbial growth and carry out laboratory tests for identification of infectious and noninfectious diseases.

3.7. Assess toxicity profiles of different xenobiotics and detect poisons in biological samples.

3.8. Apply techniques used in operating pharmaceutical equipment and instruments.

3.9. Maintain public awareness on rational use of drugs and social health hazards of drug abuse and misuse.

3.10. Advise patients and other healthcare professional about safe and proper use of medicines.

3.11. Conduct research studies and analyze the results.

3.12. Employ proper documentation and drug filing systems.

4- Intellectual Skills:

4.1. Apply pharmaceutical knowledge in the formulation of safe and effective medicines as well as in dealing with new drug delivery systems.

4.2. Comprehend and apply GLP, GMP, GSP, and GCP guidelines in pharmacy practice.

4.3. Apply quantitative and qualitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations.

4.4. Recognize and control possible physical and / or chemical incompatibilities that may occur during drug dispensing.

4.5. Select the appropriate method of isolation, synthesis, purification, identification, and standardization of active substances from different origin.

4.6. Apply the principles of bioinformatics and computer aided tools in drug design.

4.7. Apply various principles to determine characteristics of biopharmaceutical products.

4.8. Select and assess appropriate methods of infection control to prevent infections and promote public health.

4.9. Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.

4.10. Calculate and adjust dosage and dose regimen of medications.

4.11. Assess drug interactions, ADRs and pharmacovigilance.

4.12. Apply the principles of pharmacoeconomics in promoting cost / effective pharmacotherapy.

4.13. Analyze and interpret experimental results as well as published literature.

4.14. Analyze and evaluate evidence-based information needed in pharmacy practice.

5- General and Transferable Skills:

5.1. Communicate clearly by verbal and written means.

5.2. Retrieve and evaluate information from different sources to improve professional competencies.

5.3. Work effectively in a team.

5.4. Use numeracy calculation and statistical methods as well as information technology tools.

5.5. Practice independent learning needed for continuous professional development.

5.6. Adopt ethical, legal and safety guidelines.

5.7. Develop financial, sales and market management skills

5.8. Demonstrate creativity and time management abilities.

5.9. Implement writing and presentation skills.

5.10. Demonstrate critical thinking, problem-solving and decision-making abilities.

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

a) Knowledge AND Understanding

2	NARS	Programme ILOs
2.1.	Principles of basics, pharmaceutical, medical, social, behavioral, management, health and environmental science as well as pharmacy practice	A1
2.2.	Physicochemical properties of various substances used in preparation of medicines including inactive and active ingredient as well as biotechnology and radiolabeled products.	A2, a28
2.3.	Principles of different analytical techniques using GLP guidelines and	A3

	validation procedure.	
2.4.	Principles of isolation, synthesis, purification, identification and standardization methods of pharmaceutical products.	A4
2.5.	Principles of drug design, development and synthesis.	A5, A6
2.6.	Properties of different pharmaceutical dosage form including novel drug delivery systems.	A7
2.7.	Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.	A7, A8, A9
2.8.	Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose modification and bioequivalence study.	A10
2.9.	Principles of hospital pharmacy including i.v. admixture, TPN and drug distribution system.	A11, A12
2.10.	Principles of public health issues including sources and control of microbial contamination as well as sanitation, disinfection, sterilization methods and microbiological QC of pharmaceutical products.	A13, A16
2.11.	Principles of body functions in health and disease states as well as basis of genomic and different biochemical pathways regarding their different correlation with different diseases.	A14, A15, A17

2.12.	Etiology, epidemiology and laboratory diagnosis and clinical features of different disease and their pharmacotherapeutics applications	A14
2.13.	Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contraindications, ADRs, and drug interactions.	A18
2.14.	Principles of clinical pharmacology, pharmacovigilance and rational use of the drugs.	A26, A29
2.15.	Basis of complementary and alternative medicine.	A20
2.16.	Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.	A21, A25, A27
2.17.	Methods of biostatistical analysis and pharmaceutical calculations.	A22
2.18.	Principles of management including financial and human resources.	A23
2.19.	Principles of drug promotion, sales and marketing, business administration, accounting and pharmacoeconomics.	A23, A29
2.20.	Principles of proper documentation and drug filling systems.	A19, A30
2.21.	Regulatory affairs, pharmacy laws and ethics of health care and pharmacy profession.	A24

b) Intellectual Skills

4	NARS	Programme ILOs
4.1.	Apply pharmaceutical knowledge in the formulation of safe and effective medicines as well as in dealing with new drug delivery systems.	B1, B18
4.2.	Comprehend and apply GLP, GMP, GSP, and GCP guidelines in pharmacy practice.	B8, B9
4.3.	Apply quantitative and qualitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations.	B4, B10
4.4.	Recognize and control possible physical and / or chemical incompatibilities that may occur during drug dispensing.	B3, B12
4.5.	Select the appropriate method of isolation, synthesis, purification, identification, and standardization of active substances from different origin.	B2, B10, B11, B13
4.6.	Apply the principles of bioinformatics and computer aided tools in drug design.	B15
4.7.	Apply various principles to determine characteristics of biopharmaceutical products.	B4, B20
4.8.	Select and assess appropriate methods of infection control to prevent infections and promote public health.	B14, B17
4.9.	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.	B5, B6

4.10.	Calculate and adjust dosage and dose regimen of medications.	B6
4.11.	Assess drug interactions, ADRs and pharmacovigilance.	B7, B19
4.12.	Apply the principles of pharmacoeconomics in promoting cost / effective pharmacotherapy.	B19
4.13.	Analyze and interpret experimental results as well as published literature.	B15, B16
4.14.	Analyze and evaluate evidence-based information needed in pharmacy practice.	B8

c) Professional and Practical Skills

3	NARS	Programme ILOs
3.1.	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	C1
3.2.	Handle and dispose chemicals and pharmaceutical preparation safely.	C2, C3
3.3.	Compound, dispense, label, store and distribute medicines effectively and safely	C4, C18
3.4.	Extract, isolate, synthesize, purify, identify, and / or standardize active substances from different origin.	C5, C6
3.5.	Select medicines based on understanding of etiology and pathophysiology of disease.	C8
3.6.	Monitor and control microbial growth and carry out laboratory tests for	C9, C10, C12, C19

	identification of infectious and noninfectious diseases.	
3.7.	Assess toxicity profiles of different xenobiotics and detect poisons in biological samples.	C11
3.8.	Apply techniques used in operating pharmaceutical equipment and instruments.	C13
3.9.	Maintain public awareness on rational use of drugs and social health hazards of drug abuse and misuse.	C14, C20
3.10.	Advise patients and other healthcare professional about safe and proper use of medicines.	C7, C15
3.11.	Conduct research studies and analyze the results.	C16
3.12.	Employ proper documentation and drug filing systems.	C17

d) General and Transferable Skills

5	**NARS**	**Programme ILOs**
5.1.	Communicate clearly by verbal and written means.	D1
5.2.	Retrieve and evaluate information from different sources to improve professional competencies.	D9, D12
5.3.	Work effectively in a team.	D3, D11
5.4	Use numeracy calculation and statistical methods as well as information technology tools.	D4, D5
5.5	Practice independent learning needed for	D6, D12

	continuous professional development.	
5.6.	Adopt ethical, legal and safety guidelines.	D7, D12
5.7.	Develop financial, sales and market management skills	D10
5.8.	Demonstrate creativity and time management abilities.	D8, D11
5.9.	Implement writing and presentation skills.	D2
5.10.	Demonstrate critical thinking, problem-solving and decision-making abilities.	D8, D11

Teaching and learning:

The degree course features a variety of teaching approaches chosen to meet ;stated learning objectives, including:

Lectures, practical sessions, tutorials, field visits and summer training course.

Assessment:

Written examinations, practical assessments and oral presentation. Evaluation of students will be according to the following standards:

Excellent: from 85% to over from total marks.

Very good: from 75% to less than 85% from total marks.

Good: from 65% to less than 75% from total marks.

Pass: from 60% to less than 65% from total marks.

In case of failure, the evaluation is as follows:

Weak: from 30% to less than 60% from total marks.

Very weak: less than 30% from total marks.

4- Curriculum Structure and Contents:

a- Program duration: 5 years.

b- Program structure:

.b. i- No of study hours per 5 year: 182 hours

b. ii- Practical field training: 400 hours summer training.

b. iii- Number of weeks per term: 15 week.

Comparison between NARS Curriculum Structure and Faculty of Pharmacy, Kafrelsheikh University Curriculum Structure.

Percentage of NARS	Percentage of Program	No. of Study hours	Sciences	Subjects	
10-15%	11.54% (Basic)	5+3	Basic	Pharmaceutical Analytical chemistry	1
		6+3	Basic	Pharmaceutical Organic chemistry	2
		2+1	Basic	Cell biology	3
		1	Basic	Mathematics	4
		21	**Total**		
35-40%	38.46% (Pharmaceutical)	2	Pharmaceutical	Pharmacy orientation and Medical terminology	5
		6+3	Pharmaceutical	Pharmaceutics	6
		2+1	Pharmaceutical	Drug delivery systems	7
		2+1	Pharmaceutical	Physical pharmacy	8
		4+2	Pharmaceutical	Industrial pharmacy &GMP	9

		4+2	Pharmaceutical	Biopharmaceuti& Pharmacokinetics	10
		6+3	Pharmaceutical	Pharmaceutical chemistry	11
		2+1	Pharmaceutical	Drug design	12
		4+2	Pharmaceutical	Pharmacognosy	13
		4+2	Pharmaceutical	Phytochemistry	14
		2+1	Pharmaceutical	Botany and Medicinal plants	15
		2+1	Pharmaceutical	Pharmaceutical microbiology	16
		2+1	Pharmaceutical	General microbiology and genetics	17
		2	Pharmaceutical	Pharmaceutical biotechnology	18
		2+1	Pharmaceutical	Pharmaceutical analysis and Quality control	19
		2+1	Pharmaceutical	Instrumental analysis	20
		2+1	Pharmaceutical	Applied Pharmacognosy	21
		70	**Total**		
20-25%	**22.53% (Medical)**	2+1	Medical	Anatomy	22
		2+1	Medical	Histology	23
		4+2	Medical	Physiology	24
		2+1	Medical	Pathology	25
		4+2	Medical	Biochemistry	26
		2+1	Medical	Parasitology	27
		6+3	Medical	Pharmacology	28
		2	Medical	Therapeutics	29
		2+1	Medical	Microbiology of diseases	30
		2+1	Medical	Immunology & Virology	31

		41	**Total**		
10-15%	**13.73% (Pharmacy practice)**	2+1	Pharmacy Practice	Clinical biochemistry	32
		2	Pharmacy Practice	Community pharmacy practice	33
		6+3	Pharmacy Practice	Clinical Pharmacy	34
		2	Pharmacy Practice	Hospital Pharmacy	35
		2+1	Pharmacy Practice	Clinical pharmacokinetics	36
		2	Pharmacy Practice	Complementary and Alternative medicine	37
		2+1	Pharmacy Practice	Drug interactions and drug information	38
		1	Pharmacy Practice	Pharmacy laws and regulations	39
		25	**Total**		
5-10%	**6.6% (Health and environmental)**	2+1	Health and environmental	Public and environmental health	40
		2+1	Health and environmental	Bioassay and Biostatistics	41
		2+1	Health and environmental	Toxicology and Forensic Medicine	42
		2+1	Health and environmental	First aid and Emergency medicine	43
		12	**Total**		
		1	Behavioral and	Psychology	44

2-4%	**2.2% (Behavioral and social)**		social		
		2	Behavioral and social	Communication Skills and social pharmacy	45
		1	Behavioral and social	Human rights	46
		4	**Total**		
2-4%	**2.74% (Pharmacy management)**	1	Pharmacy management	Marketing and drug promotion	47
		2	Pharmacy management	Pharmaceutical business administration	48
		1	Pharmacy management	Pharmacoeconomics and Pharmacovigilance	49
		1	Pharmacy management	Quality management in health care facilities	50
		5	**Total**		
Up to 8 %	**2.2% (Discretionary)**	4	Discretionary	Elective courses	51
		4	**Total**		
182	**Total**				
		400 hr.	Pharmacy training	Summer training	52

Programme courses

First year

First semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PC101	Pharmaceutical Organic Ch.(1)
1	200	20	100	60	20	2	1	1	PA101	Pharmaceutical Anal. Ch.(1)
2	300	30	150	90	30	3	1	2	PB101	Cell Biology
2	300	30	150	90	30	3	1	2	MD101	Histology
2	300	30	150	90	30	3	1	2	PG101	Botany and Medicinal plants
2	200	30	120	—	50	2	—	2	PT101	Pharmacy orientation and Medical terminology
1	100	—	80	—	20	1	—	1	MS101	Mathematics
1	100	—	80	—	20	1	—	1	HU101	Psychology
	1800					**18**				**Total**

Second semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PC202	Pharm. Organic Ch. (2)
2	300	30	150	90	30	3	1	2	PA202	Pharm. Analytical. Ch. (2)
2	300	30	150	90	30	3	1	2	PG202	Pharmacognosy (1)
2	300	30	150	90	30	3	1	2	PT202	Physical Pharmacy
2	300	30	150	90	30	3	1	2	MD202	Anatomy
2	200	30	120	—	50	2	—	2	PP201	Communication Skills and social pharmacy
1	100	—	80	—	20	1	—	1	HU202	Human rights*
	1700					**18**				**Total**

*** Human rights is not added to the total mark of the program**

Second year

First semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PC303	Pharm. Organic Ch. (3)
2	300	30	150	90	30	3	1	2	PA303	Pharm. Analytical. Ch. (3)
2	300	30	150	90	30	3	1	2	MD303	Physiology (1)
2	300	30	150	90	30	3	1	2	PM301	General microbiology and genetics
2	300	30	150	90	30	3	1	2	PG303	Pharmacognosy (2)
2	300	30	150	90	30	3	1	2	PT303	Pharmaceutics (1)
	1800					**18**				**Total**

Second semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PA404	Instrumental analysis
2	300	30	150	90	30	3	1	2	PT404	Pharmaceutics (2)
2	300	30	150	90	30	3	1	2	PB402	Biochemistry (1)
2	300	30	150	90	30	3	1	2	MD404	Physiology (2)
2	300	30	150	90	30	3	1	2	PG404	Phytochemistry (1)
2	300	30	150	90	30	3	1	2	PM402	Parasitology
	1800					**18**				**Total**

Third year

First semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PO501	Pharmacology (1)
2	300	30	150	90	30	3	1	2	PC504	Pharmaceutical Chemistry (1)
2	300	30	150	90	30	3	1	2	PG505	Phytochemistry (2)
2	300	30	150	90	30	3	1	2	PM503	Pharmaceutical microbiology
2	300	30	150	90	30	3	1	2	PB503	Biochemistry (2)
2	300	30	150	90	30	3	1	2	PT505	Pharmaceutics (3)
	1800					**18**				**Total**

Second semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PO602	Pharmacology (2)
2	300	30	150	90	30	3	1	2	PC605	Pharmaceutical Chemistry (2)
2	300	30	150	90	30	3	1	2	PM604	Immunology & Virology
2	300	30	150	90	30	3	1	2	PT606	Biopharmaceutics & Pharmacokinetics
2	300	30	150	90	30	3	1	2	MD605	Pathology
2	300	30	150	90	30	3	1	2	MD606	First aids and emergency medicine
1	100	—	80	—	20	1	—	1	PT607	Pharmacy laws and regulations
	1900					**19**				**Total**

Fourth year

First semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PO703	Pharmacology (3)
2	200	30	120	—	50	2	—	2	PP702	Therapeutics
2	300	30	150	90	30	3	1	2	PC706	Pharmaceutical Chemistry (3)
2	300	30	150	90	30	3	1	2	PB704	Clinical Biochemistry
2	300	30	150	90	30	3	1	2	PM705	Microbiology of diseases
2	300	30	150	90	30	3	1	2	PT708	Industrial Pharmacy (1)
1	100	—	80	—	20	1	—	1	PP703	Pharmacoeconomics and Pharmacovigilance
	1800					**18**				**Total**

Second Semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PP804	Clinical Pharmacy (1)
2	300	30	150	90	30	3	1	2	PT809	Industrial pharmacy &GMP
2	200	30	120	—	50	2	—	2	PM806	Pharmaceutical Biotechnology
2	300	30	150	90	30	3	1	2	PT810	Drug delivery systems
2	200	30	120	—	50	2	—	2	PP805	Hospital Pharmacy
2	300	30	150	90	30	3	1	2	PC807	Drug Design
1	100	—	80	—	20	1	—	1	PP806	Marketing and drug promotion
	1700					**17**				**Total**

Fifth year

First semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PP907	Clinical Pharmacy (2)
2	300	30	150	90	30	3	1	2	PP908	Clinical Pharmacokinetics
2	300	30	150	90	30	3	1	2	PO904	Toxicology and Forensic Medicine
2	300	30	150	90	30	3	1	2	PP909	Drug interactions and drug information
2	300	30	150	90	30	3	1	2	PG906	Applied Pharmacognosy
1	100	—	80	—	20	1	—	1	HU903	Quality management in health care facilities
2	200	30	120	—	50	2	—	2		Elective course
	1800					**18**				**Total**

Second semester

Exam time (hours)	Total mark	Course mark				Study hours			Code	Course title
		Oral	Written	Practical	works	Total	Practical	Lectures		
2	300	30	150	90	30	3	1	2	PP010	Clinical Pharmacy (3)
2	200	30	120	—	50	2	—	2	PP011	Community pharmacy practice
2	300	30	150	90	30	3	1	2	PA005	Pharmaceutical analysis and Quality control
2	200	30	120	—	50	2	—	2	PP012	Pharmaceutical business administration
2	300	30	150	90	30	3	1	2	PM007	Public and environmental health
2	300	30	150	90	30	3	1	2	PO005	Bioassay and Biostatistics
2	200	30	120	—	50	2	—	2	PG007	Complementary and Alternative medicine
2	200	30	120	—	50	2	—	2		Elective Course
	2000					**20**				**Total**

6. 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.

7. Regulation for Progression and program completion:

"For the students to be transferred from one academic year to the next, he/she is required to have successfully passed in all subjects. However, the student may still be transferred if he/she has failed in not more than three basic subjects from the same academic year or from previous years of study. In such cases, students "carrying" subjects from one year to the next, should re-sit for their "failed" subjects in their proper respective semesters. Final year students who have failed in a maximum of three basic subjects in that year or from previous years can re-sit for their exams in those subjects in September of the same year. Should the student fail again, he/she has to re-sit for his/her exams in those subjects in their proper respective semesters thereafter as many times as necessary until he/she succeeds." Bylaws and Regulations for Undergraduate Students, Faculty of Pharmacy, Kafrelsheikh University.

Enrollment opportunities for "regular" and "external" students:

Educational Year	**Enrollment opportunities**	
	Regular student	**External students**
First	Two opportunities	None
Second	Two opportunities	One opportunity
Third	Two opportunities	Three opportunities
Fourth	Two opportunities	Three opportunities
Fifth	Two opportunities	Three opportunities

"Once a student exhausts the number of opportunities of being a "regular" student, he becomes an "external" student for a certain number of times according to the above table. Once an "external" student in a certain year succeeds in his/her exams for that year to allow him/her to be transferred to the following year, he/she automatically becomes registered as a "regular" student again". Bylaws and Regulations for Undergraduate Students, Faculty of Pharmacy, Kafrelsheikh University.

8. Evaluation of program intended learning outcomes:

Evaluator	**Tool**	**Sample**
Senior students	Questionnaire	100
Alumni	Questionnaire	20
Stakeholders	Questionnaire	10
External evaluator		
Others	None	None

عميد الكلية

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