Programme Specification (New Curriculum) Faculty of Pharmacy Nahda University

2017 / 2018

Programme Specification

University: Nahda University
Faculty : Pharmacy

A- Basic Information:

1- Programme Title: Bachelor Degree in Pharmacy
2- Programme Type: ■ Single ☐ Double ☐ Multiple
3- Department (s): 6 Depatments

- Department of Pharmaceutics and Clinical Pharmacy
- Department of Pharmacognosy
- Department of Pharmacology and Toxicology.
- Department of Pharmaceutical Chemistry

(Organic Chemistry – Analytical Chemistry – Medicinal Chemistry).

- Department of Biochemistry.
- Department of Microbiology and Immunology.

4- Coordinator: Ass. Prof. Dr.Refaat Hussein
5- External Evaluator: Prof. Dr. Ivane Saad and Prof.Dr. Mahmoud Sheeha
6- Last date of programme specifications approval: 10/10/2017

B- Professional Information:

1- Program Aims:

The main educational aims of the undergraduate program of faculty of Pharmacy – Nahda University is to graduate pharmacists with proper education and qualifications to provide all the pharmaceutical services in clinical environments in various pharmacy aspects including multi-disciplinary healthcare systems and pharmaceutical industries. Also, it foster the students to gain the professional and ethical skills in pharmaceutical care. Additionally, the graduate gains the required skills to apply research, continue self-learning, respect the ethical code of the profession and contribute effectively in the society. After completing the program, the graduate demonstrate the capability of communication skills, time management, critical thinking, problem solving, decision making, team working and the use of modern information technology.

2- Attributes:

Faculty of Pharmacy – Nahda University programme is designed to ensure that the graduate will gain fundamental knowledge, clear understanding and required skills to:

1. Demonstrate capability to handle chemical and biological products safely adopting ethical guidelines.
2. Comprehend the concepts of pharmaceutical knowledge to formulate different pharmaceutical dosage forms from different origins.
3. Acquire the proper qualifications in dispensing, storage and distribution of different pharmaceutical products.
4. Apply quality control methods to assure standardized procedures in formatting safe and effective pharmaceutical product.
5. Acquire principles of clinical pharmacy to council patients about the rational use of drugs.

6. Provide adequate knowledge about the etiology of different diseases to support the community with sufficient health care.
7. Develop outstanding skills in planning, designing, performing and reporting research based on scientific knowledge.
8. Perform marketing, promotion, business and computation and numeric skills.
9. Improve the use of communication skills, time management, critical thinking, problem-solving, decision-making, team-working.
10. Able to respect the ethical code of pharmacy profession.
11. Improve professional knowledge and skills by life long learning.

3- Intended Learning Outcomes (ILOs):

A-Knowledge and Understanding:

By the end of the program, the pharmacy graduate should be able to:
A1. Identify the basics of languages, literature arts, mathematics, management, pharmacy orientation, scientific thinking, social, pharmaceutical and medical sciences.
A2. Describe physico-chemical properties of different natural and/ or synthetic compounds used in pharmaceutical preparations including active and inactive ingredients.
A3. Enumerate the basic and applications of biotechnology.
A4. Explain concepts of qualitative and/or quantitative analysis of different compounds from different origins.
A5. List the fundamentals of quality control of drug manufacture and design of pharmaceutical products of natural or synthetic origins.
A6. Identify different methods of isolation, synthesis, and purification of different compounds.
A7. Define properties and action of drugs and how they are designed, tested and structurally identified.
A8. Discuss principles of structure activity relationship (SAR) of drugs and how to use computer aided drug design to optimize its action.
A9. Define different new drug delivery systems including targeting drug and basic concepts of controlled drug release.
A10. Enumerate the basics of different instruments used in pharmaceutical industry and drug manufacturing including sampling, documentation, packaging and drug stability.
A11. Define clinical pharmacokinetics and biopharmaceutics and their application in drug modifications, therapeutic drug monitoring and radiopharmaceuticals.
A12. Summerize the concept of hospital pharmacy and clinical pharmacist profession both inpatient and outpatient pharmacy services and patient counseling.

A13. Identify structure and components of microbial cell and understand different molecules in human body cells and application of their interaction for gene therapy of different diseases.
A14. Describe the public health issues including sterilization techniques and microbiological quality control of pharmaceutical products.
A15. Illustrate the principle of biochemical pathway and metabolism in health and disease states and their correlation with diseases.
A16. Outline body structure and normal/abnormal body function and their correlation with different diseases and how to use diet therapy for health establishment.
A17. Define the etiology and epidemiology of infectious diseases and environmental pollution that affect public health and their control.
A18. Enumerate the laboratory diagnosis and symptoms of different diseases.
A19. Distinguish the pathophysiological aspects and drug interactions on different body systems
A20. Identify fundamental pharmacological concepts and mechanism of actions of different drugs, their therapeutic uses and contraindications.
A21. Tabulate the drug information resources and pharmacological bases in the rational use of drugs.
A22. State rational uses of medicinal drugs as an alternative therapy of different diseases.
A23. Define basics of first aid and management of vital body functions and dealing with different sources of poisoning depending on their toxicological profile.
A24. State different statistical methods to describe and analyze data, its measures and different bio-statistical analysis methods.
A25. Identify basics of pharmacy management including proper use of financial facilities of pharmacy.
A26. Memorize the concepts of pharmaceutical care services introduced in community pharmacy and importance of drug promotion, sales and marketing.
A27. List the principles of proper documentation and drug filing system.
A28. Distinguish the concepts of human rights and ethics of pharmacy and how to manage pharmaceutical establishment.

B-Intellectual Skills:

By the end of the program, the pharmacy graduate should be able to:
B1. Utilize the basic pharmaceutical knowledge in the formulation of safe and effective medicine of natural or synthetic origin using the proper equipment.
B2. Critisize formulation aspects and information about physicochemical factors affecting drug delivery systems.

B3. Apply quality control parameters, GLP and GMP guidelines to achieve quality of natural compounds from different origins and stability of pharmaceuticals.
B4. Select the appropriate qualitative and quantitative analytical methods for pharmaceutical and microbiological investigations.
B5. Analyze different samples from different biological sources qualitatively and quantitatively.
B6. Select the suitable methods of isolation and identification of active compounds from natural or synthetic origins.
B7-Apply the principles of synthesis, purification, and evaluation of active constituents from different sources.
B8. Recognize the principles of drug design to demonstrate structure-activity relationship of drugs and prevent undesirable side effects.
B9. Apply basic concepts of pharmacodynamics, pharmacokinetics, and fundamental pharmacological principles with applications on biopharmaceutical products.
B10. Classify different types of microorganisms and parasites and how to control infectious diseases using different antimicrobial agents.
B11. Demonstrate normal human structures and / or functions in addition to pathological backgrounds of various diseases to promote public health.
B12. Recognize different pharmacological and/ or biochemical basis for prediction of different diseases and treatment using gene therapy and biotechnology.
B13. Utilize the basic pharmacological knowledge for handling first aid measures and proper selection and use of different drugs for management of different diseases.
B14. Apply pharmacological information and toxicological profile of different compounds for appropriate therapeutic use of drugs.
B15. Calculate dose of different medications and select the appropriate dose regimen for inpatient and outpatient to assess pharmaceutical care services introduced in community pharmacy.
B16. Recognize the principles of drug interaction and adverse drug reactions.
B17. Utilize concepts of English, pharmaco-economics, ethics of pharmacy, duties, management skills facilities, accounting, and human rights during pharmacy practice.
B18. Demonstrate experimental results based on scientific thinking.
B19. Create evidence-based drug information used in pharmacy practice.

C-Professional and Practical Skills:

By the end of the program, the pharmacy graduate should be able to:
C1. Use of medical and pharmaceutical expressions in pharmacy profession.
C2.Deal safely with chemicals and biological samples

C3.Manipulate efficiently different pharmaceutical products and animals.
C4. Use the principles of physical and chemical properties to prepare, dispense, label, store and distribute medicines effectively.
C5. Recommend the appropriate techniques for identification, extraction, isolation, synthesis and standardization of active substances form different origins.
C6. Perform different methods for qualitative and quantitative analysis for natural and biological samples.
C7.Design different analytical methods for pharmaceuticals and how to validate the applied methods
C8. Use computer system for design and synthesis of different chemical entities.
C9. Employ the pathophysiology, etiology, epidemiology, laboratory diagnosis and clinical features of different diseases.
C10. Use the knowledge of the shape and structure of different body organs in normal and diseased conditions for proper selection of medicine.
C11. Recommend medicines based on efficacy and performing experiments to investigate adverse drug reactions, interactions and contraindications.
C12. Use biotechnology, gene therapy, serological reactions, and sterilization to diagnose, control, and treatment of different diseases.
C13. Examine the causative agents of different diseases and carry out procedures required to control microbial growth in community and hospitals.
C14. Evaluate toxic effects of poisons on different organs.
C15. Employ different instruments and equipment used in pharmaceutical industry.
C16. Monitor public awareness on the proper use of drugs and nutrition and management of occupational pharmaceutical hazards and drug abuse.
C17. Counsel patients and other health care professionals about drug information in community pharmacy for proper and effective use of drugs with ethical rules.
C18. Conduct different laboratory test and employ results to solve research problems.
C19. Solve problems using principles of statistical analysis.
C20. Design proper documentation and manage drug filing.

D-General and Transferable Skills:

By the end of the program, the pharmacy graduate should be able to:
D1. Demonstrate oral and written communication skills.
D2. Develop professional competence in the internet and its use in research and communication.
D3. Work effectively in a team with pre-determined time schedule.
D4.Practice mathematical calculations and statistically analyze date.
D5. Adopt information technology skills.

D6. Demonstrate self-learning tools required for continuing professional development.
D7. Practice with professional, ethical and legal guidelines in community pharmacy.
D8. Exhibit different skills in pharmacy practice and marketing management.
D9. Work effectively in a creative manner with time management plan.
D10. Adopt problem solving, financial, and intellectual processes in practical and scientific foundations, written and presentation skills.
D11. Reveal critical thinking and decision making abilities.

National Academic Reference Standards (NARS)

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 and 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

The pharmacy graduate must demonstrate comprehensive knowledge and clear

understanding of the core information associated with the profession as follows:
2.1. Principles of basic, pharmaceutical, medical,social, behavioral, management, health and environmental sciences as well as pharmacy practice.
2.2. Physico-chemical properties of various substances used in preparation of medicines including inactive and active ingredients as well as biotechnology and radio-labeled products.
2.3. Principles of different analytical techniques using GLP guidelines and validation procedures.
2.4. Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.
2.5. Principles of drug design, development and synthesis.
2.6. Properties of different pharmaceutical dosage forms 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 studies.
2.9. Principles of hospital pharmacy including I.V. admixtures, 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 function in health and disease states as well as basis of genomic and different biochemical pathways regarding their correlation with different diseases.
2.12. Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.
2.13. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, ADRs and drug interactions.
2.14. Principles of clinical pharmacology, pharmacovigilance and the rational use of 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 preparations 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 origins.
3.5. Select medicines based on understanding of etiology and pathophysiology of diseases.
3.6. Monitor and control microbial growth and carry out laboratory tests for identification of infectious and non-infectious diseases.
3.7. Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens.
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 health care professionals 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, GPMP, GSP and GCP guidelines in pharmacy practice.
4.3. Apply qualitative and quantitative 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 methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.
4.6. Apply the principles of bio-informatics and computer-aided tools in drug design.
4.7. Apply various principles to determine the 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.

Table (1): A Comparison between the National Academic Reference Standards (NARS) and the Educational Program

NARS	Program ILOs (Knowledge and understanding)
2.1. Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A1
2.2. Physico-chemical properties of various substances used in preparation of medicines including inactive and active ingredients as well as biotechnology and radio-labeled products.	A2, A3, A11
2.3. Principles of different analytical techniques using GLP guidelines and validation procedures.	A4, A5
2.4. Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A6
2.5. Principles of drug design, development and synthesis.	A7, A8
2.6. Properties of different pharmaceutical dosage forms including novel drug delivery systems.	A9
2.7. Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.	A10
2.8. Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose modification and bioequivalence studies.	A11
2.9. Principles of hospital pharmacy including I.V. admixtures, TPN and drug distribution system.	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, A14
2.11. Principles of body function in health and disease states as well as basis of genomic and different biochemical pathways regarding their correlation with different diseases.	A15, A16

2.12. Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	A17, A18
2.13. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, ADRs and drug interactions.	A19, A20
2.14. Principles of clinical pharmacology, pharmacovigilance and the rational use of drugs.	A21
2.15. Basis of complementary and alternative medicine.	A22
2.16. Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.	A23
2.17. Methods of biostatistical analysis and pharmaceutical calculations.	A24
2.18. Principles of management including financial and human resources.	A25
2.19. Principles of drug promotion, sales and marketing, business administration, accounting and pharmacoeconomics.	A26
2.20. Principles of proper documentation and drug filing systems.	A27
2.21. Regulatory affairs, pharmacy laws and ethics of health care and pharmacy profession.	A28

NARS	**Program ILOs (Professional and practical skills)**
3.1. Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	C1
3.2. Handle and dispose chemicals and pharmaceutical preparations safely.	C2, C3
3.3. Compound, dispense, label, store and distribute medicines effectively and safely.	C4
3.4. Extract, isolate, synthesize, purify, identify, and/or standardize active substances from different origins.	C5, C6, C7, C8
3.5. Select medicines based on understanding of etiology and pathophysiology of diseases.	C9, C10
3.6. Monitor and control microbial growth and carry out	C12. C13

laboratory tests for identification of infectious and non-infectious diseases.	
3.7. Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens.	C14
3.8. Apply techniques used in operating pharmaceutical equipment and instruments	C15
3.9. Maintain public awareness on rational use of drugs and social health hazards of drug abuse and misuse.	C16
3.10. Advise patients and other health care professionals about safe and proper use of medicines.	C11, C17
3.11. Conduct research studies and analyze the results.	C18, C19
3.12. Employ proper documentation and drug filing systems.	C20

NARS	**Program ILOs (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.	B1, B2
4.2. Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice.	B3
4.3. Apply qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations.	B4, B5
4.4. Recognize and control possible physical and/or chemical incompatibilities that may occur during drug dispensing.	B2
4.5. Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	B6, B7
4.6. Apply the principles of bio-informatics and computer-aided tools in drug design.	B8
4.7. Apply various principles to determine the characteristics of biopharmaceutical products.	B9
4.8. Select and assess appropriate methods of infection control to prevent infections and promote public health.	B10, B11
4.9. Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease	B12, B13, B14

conditions.	
4.10. Calculate and adjust dosage and dose regimen of medications.	B15
4.11. Assess drug interactions, ADRs and pharmacovigilance.	B14, B16
4.12. Apply the principles of pharmacoeconomics in promoting cost/effective pharmacotherapy.	B17
4.13. Analyze and interpret experimental results as well as published literature.	B18
4.14. Analyze and evaluate evidence-based information needed in pharmacy practice.	B18, B19

NARS	**Program ILOs (General and transferable skills)**
5.1. Communicate clearly by verbal and written means.	D1
5.2. Retrieve and evaluate information from different sources to improve professional competencies.	D2,D5
5.3. Work effectively in a team.	D3
5.4. Use numeracy, calculation and statistical methods as well as information technology tools.	D4, D5
5.5. Practice independent learning needed for continuous professional development.	D6
5.6. Adopt ethical, legal and safety guidelines.	D7
5.7. Develop financial, sales and market management skills.	D8
5.8. Demonstrate creativity and time management abilities.	D9
5.9. Implement writing and presentation skills.	D1, D10
5.10. Demonstrate critical thinking, problem-solving and decision-making abilities.	D10, D11

4- Curriculum Structure and Contents:

5a. Programme duration:

5 years.

5b. Programme structure:

i. No. of hours per week: Lectures: 12-16 Lab./Exercise: 2-6
Total: 18

ii. No. of credit hours: Compulsory: 160 Free courses: 6
University requirements and English: 14

iii. Comparison between curriculum structure of NARS and Faculty of Pharmacy – Nahda University programme (FPNU):

Module	Courses	Hours	FPNU (%)	NARS (%)
Basic Sciences (11 courses) (27 credit hours)	English 1	1	**15%**	10-15
	English 2	1		
	English 3	2		
	Physical and Inorganic Chemistry	3		
	Pharmaceutical Organic Chemistry 1	3		
	Pharmaceutical Organic Chemistry 2	3		
	Pharmaceutical Organic Chemistry 3	3		
	Pharmaceutical Analytical Chemistry 1	3		
	Pharmaceutical Analytical Chemistry 2	3		
	Mathematics & Statistics	2		
	Botany and Medicinal Plants	3		
Pharmaceutical applied Sciences (21 courses) (64 credit hours)	Pharmacognosy 1	3	**35.56 %**	35-40
	Pharmacognosy 2	3		
	Phytochemistry 1	3		
	Phytochemistry 2	3		
	Pharmacy Orientation	2		
	Physical Pharmacy	3		
	Medical Terminology	2		
	Instrumental Analysis	3		
	Industrial Pharmacy 1	3		
	Industrial Pharmacy 2	3		
	Pharmaceutical Dosage Form 1	3		
	Pharmaceutical Dosage Form 2	3		
	Medicinal Chemistry 1	3		
	Medicinal Chemistry 2	3		
	Medicinal Chemistry 3	3		
	Biopharmaceutics and pharmacodynamics	3		
	Controlled Released Dosage Forms	3		

	Pharmaceutical Biotechnology Pharmaceutical Microbiology Drug analysis & Quality Control Natural Products & Quality Control General Microbiology and Immunology	3 3 3 3 3		
Medical Sciences (14 courses) (37hours)	Histology Anatomy Physiology Pathophysiology Pathology Pharmacology 1 Pharmacology 2 Clinical Pharmacology Parasitology Biochemistry 1 Biochemistry 2 Clinical Biochemistry Molecular Biology Clinical Microbiology	2 2 3 2 2 3 3 3 3 3 3 3 2 3	**20.56 %**	15-25
Pharmacy practice (9 courses) (18 credit hours)	Pharmacy Legislation Community Pharmacy Hospital Pharmacy Clinical Pharmacy and Therapeutics 1 Clinical Pharmacy and Therapeutics 2 Clinical Pharmacokinetics Drug Information	1 3 3 3 3 3 2	**10.00 %**	10-15
Health and Environmental sciences (4 courses) (9 credit hours)	Traumas & First Aid Public Health & Preventive Medicine Toxicology & Forensic Chemistry Biostatistics	2 2 3 2	**5.00 %**	5-10
Behavioral Sciences (3 courses) (7 credit hours)	Human Rights Scientific Thinking Professional Ethics	3 3 1	**3.89 %**	2-4
Pharmacy Management (3 courses) (6 credit hours)	Principles of General Management Pharmacy Accounting and Business Management Drug Marketing and Economics	3 2 1	**3.33 %**	2-4

Discretionary Elective (11 courses) (22 credit hours) Student is allowed for registration in only 6 + 6 credit hours	Drug Stability Cosmetics Clinical Nutrition Chromatography Marine Natural Products Herbal Medicine Design of dosage forms formulations Microbiological Evaluation of Drugs Spectroscopy in Structure Elucidation Drug interaction Analysis of food and cosmetics	2 2 2 2 2 2 2 2 2 2 2	**6.66 %**	Up to 8 %

iv. Practical/Field Training: 300 hours

A student receives summer training, which lasts for a total of 300 training hours in accredited pharmaceutical institutions such as private pharmacies, pharmacies affiliated to university and educational hospitals and those which apply clinical pharmacy system, as well as medical institutions, medicine factories and analysis laboratories etc. which are approved by the faculty under the academic supervision of faculty members after the student completes 108 successful credit hours (end of third level)

v. Program Levels (in credit-hours system):

Year	Semester	Lectures Hrs/Week	Tutorials-Seminars/Week	Laboratory/Week	Total Hrs
1st	1st	14	-------	4	**18**
	2nd	14	-------	4	**18**
2nd	1st	14	-------	4	**18**
	2nd	13	-------	5	**18**
3rd	1st	12	-------	6	**18**
	2nd	14	-------	4	**18**
4th	1st	13	-------	5	**18**
	2nd	15	-------	3	**18**
5th	1st	13	-------	5	**18**
	2nd	16	-------	2	**18**
Total credit hours					180

7- Summer Training

A-Basic information

Program(s) on which the course is given:	Bachelor of Pharmacy
Department offering the summer training:	All Pharmacy departments
Academic year	2018 / 2019
Prerequisite & code	After passing 108 credit hours
Title	Summer Training
Hours	300 hours during the summer vacation preceding the 4th, 5th year of study
Approval date:	18 / 9/ 2018
Coordinator:	Dr. Hossam Mokhtar Dr. Asma AboulMagd

B-Professional Information

1- Overall Aims of Course

The summer training program is designed to provide students with the opportunity to gain practical experience and training before graduation. Also, directs the student to deal with members of the external community. In addition, the summer training develop the students practical skills and preparing them for field work.

2- Intended Learning Outcomes of Course (ILOs)

a. Knowledge & Understanding Skills

At the end of the summer, training each student should be able to:

a1. List the basic concepts of quality control in manufacturing in pharmaceutical industry.

a2. Mention the active constituents of different dosage forms and the interactions of different drugs to counsel patients in pharmacies.

a3. Describe the principles of pharmacokinetics in monitoring the doses of drugs.

a4. Define the role of clinical pharmacist to counsel patients.

b. Intellectual Skills

At the end of summer training, each student should be able to:

b1. Apply general guidelines of quality control to achieve GMP and GLP on different pharmaceutical dosage forms.

b2. Recognize the fundamental principles of pharmacokinetics in calculating the doses of drugs.

b3. Apply the basics of drug interactions and its rational use to counsel patients.

c. Professional and/or Practical skills

At the end of summer training, each student should be able to:
c1. Apply the rules of labelling and storing of pharmaceutical preparations.
c2. Practice various qualitative and quantitative analytical techniques and fulfill criteria of GLP and GMP.
c3. Use the concepts of drug interaction to dispense drugs safely.
c4. Apply the rules of drug interaction and incompatibilities in manufacture of effective pharmaceutical products.
c5. Handle different equipment used in manufacturing of pharmaceuticals.
c6. Recommend the rational use of drugs to prevent the pharmaceutical hazards.

d. General & transferable Skills

At the end of this course the student should be able to:
d1. Communicate effectively with patients as well as public and health care professionals.
d2. Perform duties in compliance with professional rules in a legal and ethical framework.
d3. Adopt professional skills in marketing of pharmaceutical preparations.
d4. Make decisions regarding patient and manufacturing problems.

3- Summer training Content

On field training
Research
Some surveys

4- Teaching & learning methods

Lectures
On field visits
Research

5- Student assessment methods:

- Monitoring of the student during the training period by the assigned training place.
- Prepare research to assess knowledge and intellectual skills that the student has gained in the field of study.
- Discussion of the student in the research to assure the understanding and knowledge of the students of all aspects related to the research.
- Certificate from the place of training indicating the duration and the commitment of the student during training.
- Evaluate the student after the training period by the academic supervisor

6- List of References

According to research topic

7- Facilities required for teaching and learning:

community pharmacies, pharmaceutical companies and Industries, hospital pharmacies, research institutes.

Approval Date: 18 /9/2018

7. Programme Courses:

7. Level/Year of Program:

All levels

Level 1- Semester 1

Code	Name of Course	Prerequisites	Credit hours	Programme ILO's
PAC 1011	Physical And Inorganic Chemistry	Registration	3	A1, A4, B4, C2, C7, D2, D3
POC 1011	Pharmaceutical Organic Chemistry1	Registration	3	A1, B6, C2, C5, D1, D3
PHG 1011	Botany And Medicinal Plants	Registration	3	A1, B1, C1, D2,D3
PHL 1011	Physiology	Registration	3	A16, B11, C10, D1, D3,D5,D7,D10
PHT 1011	Pharmacy Orientation	Registration	2	A1, A28, B17, C1, C16, D3, D5, D10
MGT 101	Principles Of Management	Registration	3	A1, B17,C20, D4
ETS 401	Professional Ethics	Registration	1	A28, B17, C17, D7
ENG 111	English 1	Registration		A1, D1

Level 1- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Programme ILO's
POC1022	Pharmaceutical Organic Chemistry 2	Pharmaceutical Organic Chemistry1	3	A1, B6, C2, C5, D2, D3
PHL1022	Medical Terminology	Registration	2	A1, C1, D3,D10
PHG1022	Pharmacognosy 1	Botany And Medicinal Plants	3	A1, B7, C2, D2,D3
PHT1022	Physical Pharmacy	Physical And Inorganic Chemistry	3	A2, B2, C4, D3,D5, D10
PAC1022	Pharmaceutical Analytical Chemistry 1	Physical And Inorganic Chemistry	3	A4, B4, C7, D2,D3,D10
HUM101	Human Rights	Registration	3	A28, B17, C17, D7
ENG111	English 1	-	1	A1, B17, D1

Level 2- Semester 1

Code	Name of Course	Prerequisites	Credit hours	Programme ILO's
POC2031	Pharmaceutical Organic Chemistry 3	Pharmaceutical Organic Chemistry 2	3	A6, B7, C5, C8, D2, D5
PMB2011	General Microbiology And Immunology	Registration	3	A13, B10, C2, C12, D1,D2,D3,D10
PHG2031	Pharmacognosy 2	Pharmacognosy 1	3	A1, B7, C2, C6, D2, D3
PHT2031	Pharmaceutical Dosage Forms 1	Physical Pharmacy	3	A2, A9, B1, C3, C4, D1, D3, D4, D5
PHT2041	Pharmacy Legislation	Pharmacy Orientation	1	A25, A28, B17, C16, D2, D7
PHL2031	Anatomy	Registration	2	A16, B11, C1, D1, D2
REM101	Scientific Thinking	Registration	3	A1, B18, C19, D11
ENG112	English 2	English 1	-	A1, B17, D1

Level 2- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Programme ILO's
PBC2012	Biochemistry 1	Pharmaceutical Organic Chemistry 3	3	A13, A15, B5, C2, C6, D2, D3, D9
PHG2042	Phytochemistry 1	Pharmacognosy 2	3	A2, A4, A6, A22, B6, C5, D3,D5
PAC2032	Pharmaceutical Analytical Chemistry 2	Pharmaceutical Analytical Chemistry 1	3	A4, B4, C7, D2, D3
PMB2022	Parasitology	Registration	3	A17, A18, B10, C13, D1, D2, D7
PHT2052	Pharmaceutical Dosage Forms 2	Pharmaceutical Dosage Forms 1	3	A2, A9, A11, B2, C3, C4, D2, D3, D5, D6
PHL2042	Histology	Anatomy	2	A1, A16, B11, C10, D1, D2
ENG112	English 2	English 1	1	A1, B17, D1

Level 3- Semester 1

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
PHL3051	Pharmacology 1	Physiology	3	A7, A19, A20, B9, C3, C10, C17, D3, D4, D11
PBC3021	Biochemistry2	Biochemistry 1	3	A15, B5, C6, D1, D2, D9
PHG3051	Phytochemistry 2	Phytochemistry 1	3	A2, A4, A6, A22, B6, C5, D3, D6
PMB3031	Pharmaceutical Microbiology	General Microbiology & Immunology	3	A14, B4, B5, B10, C2, C6, C12, D3,D6,D7
PAC3041	Instrumental Analysis	Pharmaceutical Analytical Chemistry 2	3	A4, B4, C7, D1, D3, D6,D10
PHT3061	Community Pharmacy	Pharmaceutical Dosage Forms 2	3	A12, A15, A18, A26, B15, B19, C13, C17, D1, D7, D11
ENG113	English 3	English 2	2	A1, B17, D1

Level 3- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
PMC3012	Medicinal Chemistry 1	Pharmaceutical Organic Chemistry 3	3	A6, A7, A15, A20, B7, B8, C7, D1,D3,D7
PHL3062	Traumas And First Aid	Physiology Anatomy	2	A23, B13, C15, D1,D5,D6
PHL3072	Pharmacology 2	Pharmacology 1	3	A7, A19, A20, B9, B16, C3, C10, D3, D6, D7
PHT3072	Mathematics And Statistics	Registration	2	A1, A24, B18, C19, D2,D4,D9
PHT3082	Biopharmaceutics And Pharmacokinetics	Pharmaceutical Dosage Forms 2	3	A11, A24, B9, B18, C17, D1,D3,D5
PHT3092	Controlled Release Dosage Forms	Pharmaceutical Dosage Forms 2	3	A2, A9, B1, B2, C4, D1, D2, D3, D5
ENG113	English 3	English 2	2	A1, B17, D1

Level 4- Semester 1

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
PMC4021	Medicinal Chemistry 2	Medicinal Chemistry 1	3	A6, A7, A8, A20, B7, B8, C7, D1,D7,D9
PBC4031	Clinical Biochemistry	Biochemistry2	3	A16, A18, B12, C2, C9, D4, D6, D7
PHT4101	Industrial Pharmacy 1	Pharmaceutical Dosage Forms 2	3	A5, A10, A27, B1, B3, C15, C20, D1, D5, D8, D10, D11
PAC4051	Drug Analysis And Quality Control	Instrumental Analysis	3	A5, A10, A27, B3, C7, C20, D2, D10, D11
PHG4061	Natural Products And Quality Control	Phytochemistry 2	3	A4, A5, B3, B5, B7, C6, D5, D8
	Free Course		3	

Level 4- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
PBC4042	Molecular Biology	Biochemistry2	2	A3, A13, B12, C12, D2, D10
PMB4042	Clinical Microbiology	General Microbiology And Immunology	3	A17, A18, B10, C13, D2,D3,D7
PHT4112	Drug Marketing And Economics	Industrial Pharmacy1	1	A25, A26, B17, C20, D3, D9, D10, D11
PMC4032	Medicinal Chemistry 3	Medicinal Chemistry 2	3	A7, A8, B8, C8, D3, D5, D10
PHT4122	Industrial Pharmacy 2	Industrial Pharmacy1	3	A5, A10, A27, B1, B3, C15, C20, D1, D5, D8, D10, D11
PHL4082	Pathophysiology	Physiology	2	A16, A19, B11, C9, D2, D3
	Elective Course		2	
	Elective Course		2	

Level 5- Semester 1

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
PMB 5051	Pharmaceutical Biotechnology	Molecular Biology Pharmaceutical Microbiology	3	A3, B12, C12, D1,D3,D9,D10
PHT5131	Hospital Pharmacy	Biopharmaceutics And Pharmacokinetics	3	A12, A26, B15, C4,C13,C17,C18, D1,D5,D6, D11
PHT5141	Clinical Pharmacy And Therapeutics 1	Biopharmaceutics And Pharmacokinetics Pharmacology 2	3	A11, A12, B13, C11,C12,C17,C18, D1,D3, D5, D11
PHL5091	Clinical Pharmacology	Pharmacology 2	3	A21, B12, B15, B16, C9, C19, D3, D5, D10
PHL5101	Toxicology And Forensic Chemistry	Pharmacology 2	3	A17, A23, B14, C14, D3, D7, D10
	Free Course			

Level 5- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
PHT5152	Clinical Pharmacy And Therapeutics 2	Clinical Pharmacy And Therapeutics 1	3	A11, A12, B13, C11,C12,C17, D1, D7
PHT5162	Clinical Pharmacokinetics	Biopharmaceutics And Pharmacokinetics	3	A11, B9, C11, C19, D1, D5, D10
PHL5112	Pathology	Physiology Histology	2	A16, B11, C9, D2,D3
PMB5062	Public Health And Preventive Medicine	General Microbiology & Immunology	2	A14, A17, B11, C13, C16, D1,D2,D5
PHL5122	Biostatistics	Mathematics And Statistics Pharmacology 2	2	A24, B18, C19, D2, D4, D10
PHT5172	Pharmacy Accounting	Mathematics And	2	A1, A25, A28,

	And Business Management	Statistics		B17, C20, D5, D6, D8
PHL5132	Drug Information	Toxicology And Forensic Chemistry	2	A7, A21, B14, B16, B19, C14, C17, D3, D5, D10
	Elective Course		2	

Summer Training

Summer Training	Program ILOs
Field visits	A5, A11, A12, A25, A26 B3, B9, B16, B17 C4, C7, C11, C15, C16 D1, D7, D8, D11

Elective Courses:

Code	**Name of Course**	**Prerequisites**	**Credit hours**	**Programme ILO's**
PHT418E	Drug Stability	Pharmaceutical dosage forms 2 PHT2052	2	A10,B3,C7,D1,D5
PHT 419E	Cosmetics	Pharmaceutical dosage forms 2 PHT2052	2	A5,A9,B1,B2,C4,D5, D7, D10
PHT520E	Design Of dosage formulation	Controlled release dosage forms PHT3092	2	A5,B1,C3,D3, D5, D10
PHG407E	Chromatography	Phytochemistry 2 PHG3051	2	A6, B6, B7,C5,D1,D3
PHG408E	Marine Natural Proudcts	Phytochemistry 2 PHG3051	2	A2,A6,B6,C5,D10
PHG409E	Herbal Medicine	Phytochemistry 2 PHG3051	2	A20,A22,B13,C11, D2,D10
PHL514E	Drug interaction	Pharmacology 2 PHL3072	2	A19,B16,C11,D2, D3, D10
POC504E	Spectroscopy in	Pharmaceutical	2	A4, B6, C5, D5,

	Structure Elucidation	organic chemistry 3 POC2031 & Natural products and quality control PHG4061		D10
PBC405E	Clinical Nutrition	Biochemistry 2 PBC3021	2	A16,A22,B15,C16, D1, D2, D7
PMB507E	Microbiological Evaluation of Drugs	General microbiology and Immunology PMB2011	2	A5, A14,A18,B3,B10,B 11,C9,C13,D3,D11
PAC506E	Analysis of Food and cosmetics	Instrumental analysis PAC3041	2	A5, A10, A27, B3, C7, C20, D2,D10, D11

University Requirements

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
MGT 101	**Management**	Registration	3	A1,B17,C20,D3
ENG 111 ENG 112 ENG 113	**English**	Registration	1	A1,D1
ETS 401 HUM 101	**Ethics** **Human rights**	Registration Registration	1 3	A28,B17,C17,D7 A28,B17,C17, D7
REM 101	**Scientific Thinking**	Registration Registration	3 1	A1,B18,C19,D11

Free Courses

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
	اللغة العربية		2	A1, D1
	وسائل الاتصال		2	A1, A28,B17, C20, D7
	مقدمة في الصحافة		2	
	مبادئ التفاوض		2	
	مدخل الي فنون الاتصال		2	

	اساسيات تكنولوجيا المعلومات	----------	2	
	تراث الادب المصري		2	
	التذوق الادبي		2	
	احصاء حيوي		2	A24, B18, C19, D2, D4,D9
	مبادئ الاحصاء		2	
	اساسيات ريادة الاعمال		2	A1, A28, B17, C20, D5, D6,D8
	مبادئ الاقتصاد الجزئي		2	
	مبادئ العلوم السياسية		2	A28, B17, D2, D7
	مبادئ القانون		2	

8. Programme Admission Requirements:

The Faculty accepts Egyptian or international students as follows:

- General Secondary School Certificate from Science section (including Biology and Chemistry subjects), or an equivalent certificate from a foreign institute recognized by the University.

9.Regulations for Progression and Programme Completion:

- Each student personally registers his/her chosen courses at the beginning of each semester according to the timetable set by the college and the prerequisites of the courses, then take the acceptance of the academic advisor on his/her own registered schedule.
- The minimum registered credit hours in each semester are at least 10 credit hours and maximum 18 credit hours and can be increased to 22 hours for students with a GPA higher than 3.3 points and after approval of the academic advisor and the College Board. In all cases, the student is not allowed to register different number of courses other than that determined for each semester except by 2 courses more or less.
- After registration, students are allowed to remove or add courses within the drop and add period according to the previously mentioned rules.
- Grades are a measure of the performance of a student in an individual course, calculated as follows:

Grade Expression	Grade Scale	Grade Point Average Value (GPA)	Numerical Scale of Marks
Excellent	A	4	**≥90%**
	A^-	3.7	**85 - < 90%**
Very Good	B^+	3.3	**81 - < 85 %**
	B	3	**78 - < 81 %**
	B^-	2.7	**75 - < 78 %**
Good	C^+	2.3	**72 - < 75%**

	C	2	**69 - < 72 %**
	C^-	1.7	**65 - < 69 %**
Satisfactory	D^+	1.3	**63 - < 65 %**
	D	1	**60 - < 63 %**
Fail	**F**	**0**	**< 60 %**

- **First Year/Level/Semester 1:** Automatically moved to second Semester.
- **First Year/Level/Semester 2:** the student must complete 36 credit hours to be moved to the second level.
- **Second Year/Level/Semester 1:** Automatically moved to second Semester.
- **Second Year/Level/Semester 2:** the student must complete **72 credit hours** to be moved to the third level.
- **Third Year/Level/Semester 1:** Automatically moved to second Semester.
- **Third Year/Level/Semester 2:** the student must complete **108 credit hours** to be moved to the fourth level.
- **Fourth Year/Level/Semester 1:** Automatically moved to second Semester.
- **Fourth Year/Level/Semester 2:** the student must complete **144 credit hours** to be moved to the fifth level.
- **Fifth Year/Level/Semester 1:** Automatically moved to second Semester.
- **For the program completion:** the student must complete **180 credit hours**.

10. Methods of the Assessment of the learning target output :

No	Method	Learning target output
1	**Written examination**	- Knowledge and understanding - Intellectual skills
2	**Practical examination**	- Knowledge and understanding - Intellectual - Professional and practical
3	**Oral examination**	- Knowledge and understanding - Intellectual - General and transferable
4	**Others (posters, field visit, presentation, projects ... etc.)**	- Knowledge and understanding - Intellectual - Professional and practical - General and transferable

11. Evaluation of Programme Intended Learning Outcomes:

No	Evaluator	Tool	sample
1	**Senior students**	Questionnaire, brain storming	100
2	**Graduates**	Questionnaire	30
3	**Stakeholders (employers)**	Questionnaire	20
4	**External evaluator (external examiner)**	Reports	2
5	**Internal evaluator**	Reports	1

- **Program coordinator:**

Name: Ass.Prof. Dr.Refaat Hussein Signature: Date:

- **Head of Quality Assurance Unit:**

Name: **Dr.Asmaa AbouElMagd** Signature: Date:

- **Dean:**

Name: **Prof. Dr. Hamdy Mohammed Mohammed** Signature: Date: