Nahda University
Faculty of Pharmacy
Quality Assurance Unit

Programme Specification (Old Curriculum)

Faculty of Pharmacy Nahda University

2017 / 2018

Programme Specification

University: Nahda University
Faculty : Pharmacy

A- Basic Information:

1- Programme Title: Bachelor Degree in Pharmaceutical Sciences

2- Programme Type: ■ Single ☐ Double ☐ Multiple

3- Department (s): 8 Depatments:

1- Department of Pharmaceutics and Clinical pharmacy
2- Department of Pharmacognosy and Medicinal plants
3- Department of Pharmacology and Toxicology
4- Department of Analytical Chemistry
5- Department of Organic Chemistry
6- Department of Medicinal Chemistry
7- Department of Biochemistry
8- 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. Handle different chemical and biological samples safely adopting ethical guidelines.

2. Formulate various pharmaceutical dosage forms of different origins using the different concepts of pharmaceutical knowledge.
3. Acquire the proper qualifications, dealing with different pharmaceutical products, concerning dispensing, storage and distribution.
4. Formulating safe and effective pharmaceutical products through applying quality control guidelines.
5. Adopt principles of clinical pharmacy to council patients about the proper use of drugs.
6. Adopt the knowledge about the etiology of different diseases to provide the community with sufficient health care.
7. Implement professional skills in planning, designing, performing and reporting research based on scientific knowledge.
8. Demonstrate different marketing, promotion, business and computation skills.
9. Improve the ability to work effectively in a team, communicate properly, mange time, solve problems and make the proper decision.
10. Apply the ethical code of pharmacy profession.
11. Develop professional knowledge and improve skills by self and lifelong 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, and medical sciences.
A2. Mention the basic characteristics of different plant organs.
A3. Describe the chemical structure of different compounds and general and physical characters of various elements.
A4. Describe physico-chemical properties of different compounds derived from natural and/ or synthetic origins used in pharmaceutical preparations.
A5. List the concepts of qualitative analysis of different compounds.
A6. State the basics for quantitation of different compounds in variable samples.
A7. List the quality control principles used in drug manufacturing and formulation of pharmaceutical products of natural or synthetic origins.
A8. Mention different methods of isolation, synthesis, and purification of different compounds.
A9. Identify the properties and actions of drugs as well as the concepts of drug design and the principles of computer programs software.
A10. Memorize different new drug delivery systems including targeting drug and basic concepts of controlled drug release.
A11. Define different concepts of pharmaceutical technology considering variable formulation and industrial processes.

A12. List the basics of different instruments used in pharmaceutical industry and drug manufacturing including sampling, documentation, packaging, and drug stability.
A13. Identify the basics and applications of clinical pharmacokinetics and biopharmaceutics in drug modifications and drug monitoring.
A14. Enumerate the concepts of hospital pharmacy and clinical pharmacist profession both inpatient and outpatient pharmacy services and patient counselling.
A15. Mention the components of microbial cell structure; identify different molecules in human body cells and application of their interaction for gene therapy of different diseases.
A16. Memorize the etiology and epidemiology of infectious diseases and tell how environmental pollution affect public health.
A17. List sterilization techniques of pharmaceutical products and basics of microbiological quality control.
A18. Enumerate the laboratory diagnosis and symptoms of different diseases.
A19. State the principle of metabolic pathways in health and disease conditions.
A20. List different body organs, their normal/abnormal functions and their correlation with different diseases and how to use diet therapy for health establishment.
A21. Define different pathophysiological aspects and drug interactions on different body systems.
A22. Memorize mechanism of actions of different drugs their therapeutic uses, contraindications and other pharmacological aspects.
A23. Name different resources of drug information and the basis of the pharmacological uses of drugs.
A24. Identify different strategies of alternative medicine and applications of herbal treatments of different diseases.
A25. Define biotechnology and its basic applications.
A26. Define different sources of poisoning and basics of first aid management of vital body functions.
A27. Enumerate different methods of statistical analysis and bio-statistical applications to describe and analyze data.
A28. Describe different principles of pharmacy management and the ideal usage of different facilities in pharmacy.
A29. Define the various concepts of community pharmacy and importance of drug promotion, sales and marketing.
A30. Tabulate the principles of drug filing system and proper documentation.
A31. Enumerate the concepts of human rights and ethics of pharmacy.

B-Intellectual Skills:

By the end of the program, the pharmacy graduate should be able to:

B1. Apply the basic and pharmaceutical knowledge in formulating safe and effective dosage forms of plant or synthetic origins using the suitable equipment.
B2. Recognize basic chemical and physical information together with physicochemical factors that affect drug delivery systems in different formulations.
B3. Utilize all the parameters of quality control in order to achieve quality of products from different origins and stability of pharmaceuticals.
B4. Analyze different biological samples both qualitatively and quantitatively, together with investigation of their microbiological properties.
B5. Select the appropriate qualitative and quantitative analytical methods for pharmaceutical investigations.
B6. Decide the appropriate methods of isolation and identification of active compounds from natural or synthetic origins.
B7-Judge the suitable methods of synthesis, purification, and evaluation of active constituents from different sources.
B8. Apply the concepts of drug design to elucidate structure-activity relationship of drugs and modify their effects.
B9. Utilize basic principles of pharmacodynamics, pharmacokinetics, and pharmacology with applications on biopharmaceutical products.
B10. Recognize different types of microorganisms and parasites as well as different antimicrobial agents used to control infectious diseases.
B11. Relate normal human structures and / or functions to pathological backgrounds of various diseases to improve public health.
B12. Classify different pharmacological and/ or biochemical principles for prediction of different diseases and treatment using gene therapy and biotechnology.
B13. Apply different pharmacological information in first aid measures and selection of different drugs for management of various diseases.
B14. Select the appropriate drug depending on its pharmacological and toxicological profile.
B15. Decide the appropriate dose regimen for inpatient and outpatient and calculate dose of different medications in order to judge pharmaceutical care services introduced in community pharmacy.
B16. Demonstrate drug interaction principles and adverse drug reactions.
B17. Apply English, pharmaco-economics bases, ethics of pharmacy, management skills facilities, accounting, and human rights during pharmacy practice.
B18. Utilize scientific thinking basics to analyze, interpret and present experimental results.
B19. Implement evidence-based drug information in pharmacy practice.

C-Professional and Practical Skills:

By the end of the program, the pharmacy graduate should be able to:

C1. Employ suitable medical and pharmaceutical expressions in pharmacy profession.

C2.Handle chemicals and biological samples safely

C3.Use and dispose different pharmaceutical products and animal safely.

C4. Demonstrate the information about physical and chemical properties of compounds to formulate, label, store and distribute pharmaceutical products effectively.

C5. Rate various techniques used for identification, extraction, isolation, synthesis and standardization of active substances form different origins.

C6.Develop and validate methods for analyzing samples of different origins qualitatively and quantitatively

C7. Use computer system for synthesis and design of new drug molecules.

C8. Demonstrate the knowledge of the structure and function of different body organs in normal and diseased conditions for the proper selection of the medicine.

C9. Summarize etiology, epidemiology, laboratory diagnosis and clinical features of different diseases using the principles of pathophysiology.

C10. Execute experiments to investigate adverse drug reactions, interactions, and contraindications in order to recommend effective medicines.

C11. Diagnose, treat and control different diseases using biotechnology, gene therapy and serological reactions.

C12. Monitor the causative agents of different diseases to control microbial growth in community and hospitals.

C13. Summarize toxicological profile of poisons on different organs.

C14. Compare between different instruments and equipment used in pharmaceutical industry.

C15. Measure public awareness on the proper use of drugs and nutrition and follow up the management of pharmaceutical hazards and drug abuse.

C16. Use drug information to council patients and other health care professionals about the proper use of drugs with ethical rules.

C17. Conduct different laboratory tests and employ results to solve research problems.

C18. Document and manage drug filing properly.

D-General and Transferable Skills:

By the end of the program, the pharmacy graduate should be able to:

D1. Communicate properly using oral and written skills.

D2. Perform research and communicate with others using the internet.

D3. Mange time and effectively work in a team in a creative manner.

D4. Demonstrate mathematical calculations in data analysis.
D5. Use technology skills in an efficient way.
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.Perform financial, and intellectual processes in practical and scientific foundations.
D10. Adopt critical thinking in problem solving and decision making.

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, A2
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.	A3,A4
2.3. Principles of different analytical techniques using GLP guidelines and validation procedures.	A5,A6,A7
2.4. Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A5,A6,A8
2.5. Principles of drug design, development and synthesis.	A9
2.6. Properties of different pharmaceutical dosage forms including novel drug delivery systems.	A10
2.7. Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.	A11,A12
2.8. Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose modification and bioequivalence studies.	A13
2.9. Principles of hospital pharmacy including I.V. admixtures, TPN and drug distribution system.	A14
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.	A15,A16,A17
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.	A18,A19

2.12. Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	A16,A18,A20
2.13. Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, ADRs and drug interactions.	A21,A22
2.14. Principles of clinical pharmacology, pharmacovigilance and the rational use of drugs.	A23
2.15. Basis of complementary and alternative medicine.	A24,A25
2.16. Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.	A26
2.17. Methods of biostatistical analysis and pharmaceutical calculations.	A27
2.18. Principles of management including financial and human resources.	A28
2.19. Principles of drug promotion, sales and marketing, business administration, accounting and pharmacoeconomics.	A29
2.20. Principles of proper documentation and drug filing systems.	A30
2.21. Regulatory affairs, pharmacy laws and ethics of health care and pharmacy profession.	A31

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
3.5. Select medicines based on understanding of	C8, C9,C10

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.	C11,C12
3.7. Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens.	C13
3.8. Apply techniques used in operating pharmaceutical equipment and instruments	C14
3.9. Maintain public awareness on rational use of drugs and social health hazards of drug abuse and misuse.	C15
3.10. Advise patients and other health care professionals about safe and proper use of medicines.	C16
3.11. Conduct research studies and analyze the results.	C17
3.12. Employ proper documentation and drug filing systems.	C18

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	B10,B11

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.	B12,B13,B14
4.10. Calculate and adjust dosage and dose regimen of medications.	B15
4.11. Assess drug interactions, ADRs and pharmacovigilance.	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.	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
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,D9
5.8. Demonstrate creativity and time management abilities.	D3
5.9. Implement writing and presentation skills.	D1
5.10. Demonstrate critical thinking, problem-solving and decision-making abilities.	D10

4- Curriculum Structure and Contents:

5a. Programme duration:

5 years.

5b. Programme structure: i. No. of hours per week: Lectures: 12-15 Lab./Exercise: 10-12 Total: 23-27

ii. No. of credit hours: Compulsory: 175 Elective: 11

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 (12 courses) (30 credit hours)	English 1	1	15.38%	10-15
	English 2	1		
	English 3	2		
	General and Physical Chemistry	3		
	Organic Chemistry 1	3		
	Organic Chemistry 2	3		
	Organic Chemistry 3	3		
	Analytical Chemistry 1	3		
	Analytical Chemistry 2	3		
	Analytical Chemistry 3	3		
	Mathematics & Statistics	2		
	Botany and Medicinal Plants	3		
Pharmaceutical applied Sciences (24 courses) (70 credit hours)	Pharmacognosy 1	3	**35.90%**	35-40
	Pharmacognosy 2	3		
	Pharmacognosy 3	3		
	Phytochemistry 1	3		
	Phytochemistry 2	3		
	Pharmacy Orientation	2		
	Physical Pharmacy 1	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		
	Pharmaceutical Technology	3		
	Biopharmaceutics and	3		

	pharmacodynamics Controlled Dosage Forms Pharmaceutical Biotechnology Pharmaceutical Microbiology Drug analysis & Quality Control Herbal Medicine Natural Products & Quality Control	3 3 3 3 3 3		
Medical Sciences (16 courses) (48 hours)	Histology Anatomy Physiology Pathophysiology Pathology Pharmacology 1 Pharmacology 2 Clinical Pharmacology Drug Therapy 1 Drug Therapy 2 Parasitology Microbiology and Immunology Clinical Microbiology Biochemistry 1 Biochemistry 2 Clinical Chemistry	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	**24.62%**	15-25
Pharmacy practice (7 courses) (18 credit hours)	Pharmacy Legislation Community Pharmacy Hospital Pharmacy Clinical Pharmacy 1 Clinical Pharmacy 2 Clinical Pharmacokinetics Molecular Biology	1 3 3 3 3 3 2	**9.23%**	10-15
Health and Environmental sciences (4 courses) (10 credit hours)	Traumas & First Aid Public Health & Preventive Medicine Toxicology & Forensic Chemistry Biostatistics	2 2 3 2	**5.13%**	5-10
Behavioral Sciences	Human Rights Scientific Thinking	3 3	**3.59%**	2-4

(3 courses) **(7 credit hours)**	Professional Ethic	1		
Pharmacy Management **(3 courses)** **(6 credit hours)**	Management Pharmacy Accounting and Business Management Drug Economics	3 2 1	**3.08%**	2-4
Discretionary Elective **(15 courses)** **(43 credit hours)** Student is allowed for registertion in only 6 credit hours	Drug Stability Drug Design Veterinary Drugs Clinical Pathology & Hematology Microbiological Evaluation of Drugs Drug Bioavailability Plant Tissue Culture Scientific Reports and Presentation Clinical Nutrition Spectroscopy in Structure Elucidation Marine Natural Products Drug Interactions Drug Information Cosmetics Chromatography	3 3 3 3 3 3 3 3 3 2 2 3 3	**3.08%**	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 120 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	16	-------	5	21
	2nd	15	-------	5	20

2nd	1st	15	-------	5	20
	2nd	13	-------	6	19
3rd	1st	14	-------	6	20
	2nd	14	-------	6	20
4th	1st	14	-------	6	20
	2nd	15	-------	5	20
5th	1st	14	-------	6	20
	2nd	16	-------	4	20
Total credit hours					**200**

4- Summer Training

A-Basic information

Program(s) on which the course is given:	Bachelor Degree in Pharmaceutical Sciences
Department offering the summer training:	All Pharmacy departments
Academic year	2017 / 2018
Prerequisite & code	After passing 120 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. Asmaa 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. Memorize the active constituents of different pharmaceutical preparations as well as their interactions for advising patients in pharmacy practice.
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
CHG 101P	General & physical chemistry	Registration	3	A3,B2, C2, D1, D3
CHO101P	Organic chemistry 1	Registration	3	A3,B6,C2,C5,D1,D3
COG 101	Botany & Medicinal Plants	Registration	3	A2,B1,C1,D1,D3
CHA 101	Analytical Chemistry 1	Registration	3	A5,B5,C6,D1,D3
MTH 101	Mathematics & Statistics	Registration	2	A1,A28,B18,C17,D2,D3, D6
MGT 101	Management	Registration	3	A1,B17,C18,D4
PTO 101	Pharmacy Orientation	Registration	2	A1,B17,C1,C15,D3, D5, D8
ENG 111	English	Registration	1	A1,B17, D1

Level 1- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Programme ILO's
CHO 201	Organic Chemistry 2	Organic chemistry 1	3	A3,B6,C5,D1,D3
CHA 201	Analytical Chemistry 2	Analytical Chemistry 1	3	A6, B5, C6, D2, D6
COG 201	Pharmacognosy1	Botany & Medicinal Plants	3	A2,B7,C2,D1
HST 101P	Histology	Registration	3	A1,B11,C8,D1,D2,D3
PHP 201	Physical Pharmacy	General & physical chemistry	3	A4,B2,C4,D3,D8
ETS 401	Ethics	Registration	1	A31,B17,C16,D7
HUM 101	Human rights	Registration	3	A31,B17,C16,D7
REM 101	Scientific Thinking	Registration	3	A1,B18,C17,D10
ENG 111	English 1	-	1	A1,B17, D1

Level 2- Semester 1

Code	Name of Course	Prerequisites	Credit hours	Programme ILO's
CHO 301	Organic Chemistry 3	Organic Chemistry 2	3	A8,B7,C5,C7,D2,D3
CHA 301	Analytical Chemistry 3	Analytical Chemistry 2	3	A6, B5, C6, D1, D3
COG 301	Pharmacognosy 2	Pharmacognosy 1	3	A2,B7,C2,C6,D2,D3
ANT 101P	Anatomy	Registration	3	A20,B11,C1,D1,D3
PHS 101P	Physiology	Registration	3	A20,B11,C8,D2,D5
MDT 201	Medical Terminology	English 111	2	A1, C1, D1, D3
PAL 101	Pharmacy legislations	Registration	1	A28,B17,C15,D2, D3, D7
PMG301	Pharmacy Accounting and Business Management	Registration	2	A1,B17,C18,D1, D6, D9
ENG112	English 2	English 1	1	A1,B17, D1

Level 2- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Programme ILO's
CHB 201P	Biochemistry 1	Organic Chemistry 3	3	A15,A19,B4,C2, C6,D2,D3
COG 302	Pharmacognosy 3	Pharmacognosy 2	3	A2,A4,B7,C2,D 2,D3
CHA 401	Instrumental Analysis	Analytical Chemistry 3	3	A6, B5, C6, D1, D6, D9
MBG 101P	Microbiology & Immunology	Registration	3	A15,B10,C2, C11, D3
PRS 101	Parasitology	Registration	3	A16,A18,B10, C12,D1,D3,D7
PTD 101	Pharmaceutical Dosage Forms1	Physical Pharmacy 1	3	A4,B1,C3,C4, D8
PPM 301	Public Health & Preventive Medicine	Microbiology & Immunology	2	A16,A18,B11, C12,C15,D1, D2, D3
ENG112	English 2	English 1	1	A1,B17, D1

Level 3- Semester 1

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
CHM 201	Medicinal Chemistry 1	Organic Chemistry 3	3	A9,A19,A22, B7,B8,C6,D2
MBG 201	Clinical Microbiology	Microbiology & Immunology	3	A16,A18,B10, C12,D3
PTD 201	Pharmaceutical Dosage Forms 2	Pharmaceutical Dosage Forms1	3	A4,A10,B2,C3, C4,D5
CHB 301P	Biochemistry 2	Biochemistry 1	3	A19,B4,C6,D2,D3
COG 401	Phytochemistry 1	Pharmacognosy 3	3	A4,A5,A7,A8, B6,C5,D5
PHS 201	Pathophysiology	Physiology	3	A20,A21,B11, C9,D2,D3
ENG113	English 3	English 2	2	A1,B17, D1

Level 3- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
CHM 301	Medicinal Chemistry 2	Medicinal Chemistry 1	3	A9,A22,B7,B8,C6, D5
PTT 301	Pharmaceutical Technology	Registration	3	A9, A11,A30,B1, C4, C14,D1, D2, D3,D5
PTC 301	Community Pharmacy	Registration	3	A14,A18,A29,B15,B19, C12,C16,D1, D2, D7, D10
BPD 301	Biopharmaceutics & Pharmacodynamics	Pharmaceutical Dosage Forms 2	3	A13,A27,B9,B18,C16, D4
COG 402	Phytochemistry 2	Phytochemistry 1	3	A4, A5, A6, A7, B6, C5, D3, D6
PTH 201P	Pathology	Histology	3	A1, A20, A21, B11, C8, D7
TFA 101	Traumas and First aid	Registration	3	A26, B13, C15, D1, D2, D6
ENG113	English 3	English 2	2	A1,B17, D1

Level 4- Semester 1

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
PLG201	Pharmacology 1	Physiology	٣	A9, A21, A22, B9, B16, C3, C10, D3, D4, D10
PTI 301	Industrial pharmacy 1	Pharmaceutical Dosage Forms 2	٣	A4, A9, A11, A12, B1, B3, C12, C18, D1, D2, D5, D7, D10
PTL 301	Clinical Pharmacy 1	Biopharmaceutics & Pharmacodynamics	٣	A13, A14, B13, C9, C11, C16, D1, D2, D3, D10
PTH 402 PTL402	Hospital pharmacy	Biopharmaceutics & Pharmacodynamics	٣	A13, A14, B15, C4, C12, C16, D1, D2, D6, D10
PTD 302	Controlled release dosage forms	Pharmaceutical Dosage Forms 2	٣	A4, A10, B1, B2, C4, D, D2, D3, D5
CHM 401	Medicinal chemistry 3	Medicinal chemistry 2	٣	A8, B8, C7, D5, D7, D9

Level 4- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
PLG 301	Pharmacology 2	Pharmacology 1	3	A9, A21, A22, B9, B16, C3, C10, D3, D6, D10
PTL 401	Clinical pharmacy 2	Clinical pharmacy 1	٣	A13, A14, B13,C9,C11,C16,D1, D3, D7
CHA 501	Drug Analysis & quality Control	Medicinal Chemistry 3 Analytical chemistry 3	3	A9, A12, A30, B3, C6, C18, D3, D10
CHC 401	Clinical chemistry	Biochemistry 2	٣	A18, A19, A20, B12, C2, C9, D4,D6, D7
DES 501	Drug Marketing And Economics	Clinical pharmacy 1 Hospital pharmacy	1	A28, A29, B17, C18, D6, D1, D3, D10, D8
COG 501	Herbal medicine	Phytochemistry 2	3	A24, B6, B7, C5,C6, D2, D3
	Elective Course		3	

Level 5- Semester 1

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
FCP 401	Forensic Chemistry & Poisons	Pharmacology 2	٣	A16, A26, B14, C13, D1, D3, D7
PLG 401	Drug therapy 1	Pharmacology 2 Clinical pharmacy 2	٣	A14, A22, B13, B14, B16, C9, C11,C16, D1, D3
PTL 501	Clinical Pharmacokinetics	Biopharmaceutics And Pharmacokinetics	٣	A13, B9, C10, C17, D1, D3, D5
PTI 401	Industrial pharmacy 2	Industrial pharmacy 1	3	A9, A11, A12, B1, B3, C14, C18, D1, D2, D7, D10
MBG 301	Molecular biology	Biochemistry 2	3	A15, A25, B12, C11, D2, D3
PLG 402	Clinical pharmacology	Pharmacology 2	3	A23, B12, B15,B16, C10, C17, D1, D3, D5
	Elective course	----	3	
	Free course	----	3	

Level 5- Semester 2

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
PLG 501	Drug therapy 2	Drug therapy 1	3	A14, A22, B13, B14, B16, C9, C11, C16, D3, D6
MBG 401	Pharmaceutical Microbiology	Clinical Microbiology	3	A17, B4, B5, B10, C6, C11, D2
BTG 501	Pharmaceutical biotechnology	General Microbiology & Immunology Biochemistry 2	3	A17, A25, B12, C11, D2,D6,D10
COG 502	Natural Products &Quality Control	Phytochemistry 1 Phytochemistry 2	3	A5, A6, A9, B3, B4, B7, C6, D2,D9
BST 501	Biostatistics	---------	2	A27, B18, C17, D2, D3, D4
	Elective Course		3	

متطلبات الجامعة

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
MGT 101	Management	Registration	3	A1,B17,C18,D4
ENG 111 ENG 112 ENG 113	English	Registration	1	A1,D1
ETS 401 HUM 101	Ethics Human rights	Registration Registration	1 3	A31,B17,C16,D7 A31,B17,C16,D7
REM 101 ETS 401	Scientific Thinking Ethics	Registration Registration	3 1	A1,B18,C17,D10 A31,B17,C16,D7

Free Courses

Code	Name of Course	Prerequisites	Credit hours	Program ILO's
	اللغة العربية		2	A1, D1
	وسائل الاتصال		2	A1, A31,B17, C18, 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	A27, B18, C17, D4
	مبادئ الاحصاء		2	
	اساسيات ريادة الاعمال		2	A1, A28, B17, C18, D4
	مبادئ الاقتصاد الجزئي		2	
	مبادئ العلوم السياسية		2	A28, B17, D7
	مبادئ القانون		2	

Elective Courses:

Code	Name of Course	Prerequisites	Credit hours	Programme ILO's
PTS 301	Drug Stability	Pharmaceutical dosage forms 2 PTD 201	2	A12, B1, B2, C3, C4, D1,D2, D5
PTB 501	Drug bioavailability	Pharmaceutical dosage forms 2 PTD 201	2	A13, B2, B9, C4, D4, D6
		Biopharmaceutics And Pharmacokinetics BPD 301		
COG 401	Cosmetics	Registration	3	A9, A10, B1, B2, C3, C9, D1,D2, D3, D5
CHR 401	Chromatography	Phytochemistry 1 COG 401	3	A8, B3, B5, B7, C6, D5, D10
		Phytochemistry 2 COG 402		
MAR 501	Marine Natural Products	Phytochemistry 1 COG 401	3	A4, A8, B3, B5, B7,C6,D5,D10
		Phytochemistry 2 COG 402		
PTD 302	Drug design	Pharmaceutical dosage forms 2 PTD 201	3	A9, B8, C7, D2, D5
PLG 503	Drug interaction	Pharmacology 2 PLG 301	2	A21, B16, C10, D2, D3, D10
SPE 501	Spectroscopy in Structure	Natural products and quality control COG	3	A5, A6, B6, B7,C5, C6, D2, D10

	Elucidation	502		
CLN 501	Clinical Nutrition	Biochemistry 2 CHB 301 Clinical pharmacy 2 PLG 402	3	A20, A24, B11, C15, D2, D3, D7
MBG 301	Microbiological Evaluation of Drugs	General microbiology and Immunology MBG 101 Medicinal chemistry 2 CHM 301	3	A9, A17, A18, B4, C6, D1,D3
PTV 303	Veterinary Drugs	Pharmaceutical dosage forms 2 PTD 201	3	A4, A11, A12, B1, B9, C4, C14, D5, D6
PTH 301	Clinical pathology & hematology	Pathology PTH 201	3	A15, A16, B4, B11, C2, C11, D5, D10
PTC 501	Plant tissue culture	Histology HST 101 General microbiology and Immunology MBG 101	3	A8,B6, B7, C5, C6 D1, D3
SRP 501	Scientific reports and presentation	Registration	3	A1, B18, C17, D1, D10
PTI 502	Drug information	Pharmacology 2 PLG 301 Clinical pharmacy 2 PTI 301	2	A9, A23, B9, B16, B17, B19, C13, C16, D7, D8

Summer Training

Summer Training	Program ILOs
Field visits	A9, A13, A14, A28, A29 B3, B9, B16, B17 C4, C6, C10, C14, C15 D1, D7, D8, D10

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 12 credit hours and maximum 21 credit hours and can be increased to 24hours for students with a GPA higher than 3.5 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	**82.5 - < 85 %**
	B	3	**77.5 - < 82.5 %**
	B^-	2.7	**75 - < 77.5 %**
Good	C^+	2.3	**72.5 - < 75%**
	C	2	**67.5 - < 72.5 %**
	C^-	1.7	**65 - < 67.5 %**
Satisfactory	D^+	1.3	**62.5 - < 65 %**
	D	1	**60 - < 62.5 %**
Fail	**F**	**0**	**< 60 %**

- **First Year/Level/Semester 1:** Automatically moved to second Semester.
- **First Year/Level/Semester 2:** the student must complete 40 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 **80 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 **120 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 **160 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 **200 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.)**	- Intellectual - General and transferable

11. Evaluation of Programme Intended Learning Outcomes:

No	Evaluator	Tool	sample
1	**Senior students**	Questionnaire, brain storming	10-15%
2	**Graduates**	Questionnaire	-----
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: