Programme Specification

University: Assiut Faculty: Pharmacy

Programme Specification

A- Basic Information

1-Programme title: Bachelor of Pharmaceutical Sciences (Clinical Pharmacy)

2- Programme type: Single [√] Double [ ] Multiple [ ]

3- Departments

A. **Departments affiliated to Faculty of Pharmacy:**
Department of Pharmaceutics, Pharmacognosy, Medicinal Chemistry, Pharmaceutical Organic Chemistry, Pharmaceutical Analytical Chemistry, Industrial Pharmacy.

B. **Departments affiliated to Faculty of Medicine:**
Anatomy, Histology, Physiology, Microbiology, Pharmacology, Pathology, Public Health and Community Medicine, Parasitology, Biochemistry, Oncology, Dermatology, Pediatric Medicine, Gastroenterology and Tropical Medicine, Chest Disease, and Cardiology.

C. **Departments affiliated to Faculty of Science:**
Botany, Zoology, Chemistry and Mathematics.

D. **Departments affiliated to Faculty of Arts:**
English language and Sociology

E. **Departments affiliated to Faculty of Education:**
Psychology.

F. **Departments affiliated to Faculty of Commerce:**
Business Administration and Accounting

G. **Departments affiliated to Faculty of Law:**
Islamic Law

4- **Coordinator:** Prof. Dr. Gamal A. Saleh

5- **External Evaluations:** Committee evoked from supreme council of universities

a. Prof. Dr. Mohamed S. Kamel, Professor of Pharmacognosy, Faculty of Pharmacy, El- Minia University.
b. Prof. Dr. Norhan H. Fanaky, Professor of Microbiology, Faculty of

Pharmacy, Alexandria University.

c. Prof. Dr. Mahmoud B. Ashmawy, Professor of Medicinal Chemistry, Faculty of Pharmacy, Mansura University.

6- **Last date of Programme Specification approval:** Faculty of Pharmacy, Assiut University Committee (603) Feb 16th 2014.

B– Professional Information

1) Program Aims:

Providing the labor market needs with clinical pharmacists who will be leaders in developing innovative models of clinical practice as well as in education and clinical research.

1- Providing private and public hospitals with graduated clinical pharmacists having an influential impact on the pharmaceutical care and consequently on the therapeutic outcomes of patients in clinical settings.

2- Dissemination effectively of drug information through the active role of clinical pharmacists who are acquainted and practiced on searching for medical information.

3- Permitting graduated clinical pharmacists in the various fields to be the most authorized persons in drug-drug interaction, problem solving and therapeutic regimen adjustments.

4- Acquire better communication skills.

5- Achieving economic benefits in the future from applying evidence-based pharmacy practice and to rationalize drug use in hospital and in community.

6- Practicing clinical pharmacy graduates to be engaged with research activities concerning clinical case studies and hence improving patients care and contributing in improving patients and community quality of life.

2) Graduate Attributes

Clinical pharmacy graduate work in multidisciplinary profession and should get the mandatory attributes in clinical pharmacy aspects in order to tracking their career.

Graduate attributes are the qualities, skills and understanding. These attributes include the disciplinary expertise and technical knowledge in the core of studied courses as follow:

1. Handle chemicals, pharmaceutical materials and medicinal plants properly according to their properties and hazards.
2. Classify laboratory waste according to their type and hazards before safe disposal.
3. Formulate, prepare and dispense different pharmaceutical dosage forms from different sources.
4. Store pharmaceutical preparations according to good storage practice and distribution.
5. Perform analysis of raw materials, pharmaceutical dosage forms, herbal products, biological samples, biotech products according to GMP, GLP, FDA, ICH guidelines and official compendia procedures.
6. Statistical analysis and writing official analysis report.
7. Provide counseling services to patients and community about safe use, abuse and misuse of medications.
8. Advice community about storage and disposal of medication and medical devices
9. Figure out the principles of disease pathophysiology and cooperate with health care professionals in improving the health care services and prevention of diseases.
10. Design and carry out research project using appropriate methodologies and resources.
11. Improve presentation, promotion, marketing and business administration skills as well as computation and statistics skills.
12. Show effective verbal and nonverbal communication, time management. Problem-solving and decision-making skills.
13. Working in team with health care professionals.
14. Aware with all legal and ethical regulations related to pharmacy practice.
15. Improve professional skills through continuous education and self-learning.

3) Intended learning outcomes (ILOs):

The clinical pharmacy graduate must demonstrate the following learning outcomes and able to:

a- Knowledge and Understanding:

a1. Illustrate the principles of basic sciences (chemistry, mathematics, taxonomy, anatomy, …).

a2. Mention the principles of pharmaceutical sciences and pharmacy practice.

a3. Summarize the physicochemical properties of drugs including kinetics and assessment of chemical and physical stability of active ingredients and additives.

a4. Demonstrate the fundamentals of different analytical techniques and their application in pharmaceutical analysis according to GLP and ICH guidelines.

a5. Demonstrate the principle of techniques used in isolation, and analysis of pharmaceutical active ingredients and excipients.

a6. Illustrate the principle of pharmaceutical compound synthesis, purification, and identification.

a7. Outline the structural activity relationship (SAR) of group of pharmaceutical compounds and design of new compounds using CADD software.

a8. Describe the characteristics and formulation of different dosage forms as well as different drug delivery systems.

a9. Determine the principles of various instruments of drug formulation, packaging, and storage.

a10. Describe the pharmacokinetics, route of administration, and bioavailability of medicine in variable pharmaceutical preparations and application in pharmacy practice.

a11. Describe the principles of hospital pharmacy and services as I.V. admixtures, total parenteral nutrition (TPN) and drug distribution system.

a12. Outline the principles of public health issues including sources and control of microbial contamination as well as sanitation, disinfection and sterilization methods.

a13. Describe the body function in health and disease state and understand correctly the metabolic pathways in human systems, healthy life style as well as general knowledge about molecular biology.

a14. Mention different biochemical and metabolism pathways and their correlation with different diseases.

a15. Mention the etiology, epidemiology and clinical features of different diseases and their pharmacotherapeutic approaches.

a16. Explain the principles of pharmacology including actions, therapeutic uses, misuse, and abuse of medicines, adverse reactions and interactions.

a17. Explain the pharmacotherapeutics approaches for various diseases according to clinical protocol.

a18. Illustrate the principles of clinical pharmacology, pharmacotherapy and drug monitoring.

a19. Outline the properties and chemistry of natural products, complementary and alternative medicine and their application in therapeutics in addition to principles of quality control of herbal products.

a20. Draw the basics of macro and microscopical characters of different medicinal plant organs, detection of adulteration as well as, their proper collection, storage and marketing in addition to chemotaxonomic classification of medicinal plants.

a21. Define the toxic profile of various drugs and other xenobiotics including sources, identification, symptoms, management, control and first aid measures.

a22. Demonstrate methods of biostatistical analysis, biological standardization and pharmaceutical calculations.

a23. Determine the principles of management elements including human resources and finance.

a24. Explain the principles of drug promotion, sales and marketing, business administration, accounting and basis of pharmacoeconomics in pharmacy practice.

a25. Demonstrate the basics of documentation and filling systems.

a26. State the pharmacy laws, ethics and codes of practice in community and its impact on relationship with patient and other healthcare professionals.

a27. Explain reaction mechanisms utilized in pharmaceutical compounds synthesis.

a28. Describe the handling and stability of biotechnology and radiolabeled products.

b- Intellectual Skills:

b1. Apply knowledge to prepare safe and effective medicines for individual patient use.

b2. Recognize GLP, GSP, GCP and GPMP guidelines in pharmacy practice.

b3. Apply qualitative and quantitative analytical and biological methods for identification, quality control and assay of raw materials as well as pharmaceutical preparations.

b4. Predict possible physicochemical and biological incompatibilities that may occur during drug dispensing.

b5. Select appropriate methods of extraction, isolation, purification, identification, standardization and formulation of medicines from natural or synthetic origin.

b6. Predict the methods of synthesis and properties of medicinal agents and their relation to molecular structure by applying the principles of bio-informatics and computer aided tools in drug design.

b7. Apply information of biotechnology and pharmacoeconomics principles and propose approaches for monitoring and design of medicinal agents of different sources.

b8. Select appropriate methods of infection control to prevent infections and promote public health.

b9. Utilize pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.

b10. Calculate dosage and dose regimen of medications.

b11. Assess drug interactions and adverse drug reactions.

b12. Recognize the relationship between human body systems, safe, effective and economical use of medicines.

b13. Comprehends reliably published literature and collaborates with others in the pharmacy practice.

b14. Apply the information needed in pharmacy practice giving clear advice and critical decisions about patient therapy in cooperation with health team professionals.

b15. Evaluate evidence-based guidelines involving science, biotechnology and professional principles required in pharmacy practice.

b16. Developing the ability to study the attitudes and analyze the environmental variables that affect the drug marketing.

c- Professional and practical skills:

c1. Use properly the pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.

c2. Handle chemicals and dispose hazardous chemicals and materials according to safety guidelines.

c3. Dispense medicines in appropriate dosage forms accurately and safely.

c4. Practice the extraction, identification and standardization of active ingredients from different biological origin.

c5. Synthetize preliminary chemical substances and active constituents of different drug categories.

c6. Purify and identify the newly synthesized chemical compounds or drugs, detect impurities in different pharmaceutical preparations and test their limits.

c7. Select the appropriate medication therapy for a given diseases based on its etiology, pathophysiology, patient medical history, possible interactions and age-related factors.

c8. Evaluate the selected drug therapy based on patient's progress and laboratory results.

c9. Control microbial growth and carry out laboratory tests to identify infectious and non-infectious diseases, control sterilization processes and aseptic procedures.

c10. Determine the toxicity profiles of different xenobiotics and detect poisons in biological specimens.

c11. Practice first aid procedures in an emergency case.

c12. Operate different pharmaceutical instrumentations and laboratory procedures, in analysis of biological samples and drugs either of natural or synthetic source.

c13. Undertake risk assessments concerning drug-drug interaction, adverse reaction, toxicity profile and incompatibilities in different pharmaceutical preparations.

c14. Provide patients and health care professionals with advice about safe and proper use of medicine.

c15. Perform research studies depending on applying the scientific background to analyze the obtained results.

c16. Employ proper documentation and drug filling system.

c17. Select the appropriate marketing methods for promotion and marketing of the pharmaceutical products.

d- General and Transferable skills:

d1. Interact effectively with patients, the public and health care professionals.

d2. Retrieve and critically evaluate pharmaceutical information and clinical laboratory data.

d3. Work effectively in a team in a variety of health care settings.

d4. Calculate medicine doses and dosage regimens through skills in numeric, computation methods and application of biological statistics in different field of pharmacy.

d5. Acquire problem-solving skills in groups for continuing professional development needs.

d6. Act according to professional and moral ethical codes and approaches considering laws of human rights as well as legal and safety guidelines.

d7. Develop financial, sales and market management skills.

d8. Manage her / his time effectively.

d9. Apply information technology skills.

d10. Demonstrate critical thinking and decision-making abilities in a variety of theoretical and practical situations.

d11. Provide good advice about balanced diet to promote the efficiency of medication and give a hand in poisoning cases**.**

4) Academic standards:

3- External references for standards (benchmarks)

- External references selected to confirm the appropriateness of academic standards. NARS (2009) was adopted as external reference guiding the clinical program in faculty of pharmacy- Assiut University to set on its own academic standards.
- Comparison of provision to selected external reference. A comparison between clinical pharmacy graduate attributes and NARS (matrix # 1) and program ILO's and NARS (matrix # 2) was accomplished and approved by the board of the faculty committee, number (603) – dated (Feb. 16th 2014). The program shows some strong points as:
    1. The ratio of staff to student in this program is equal to 1:3.5 and this allows better circumstances to perform the different teaching learning activities during lectures, in practice and in the clinical settings.
    2. A strong cooperative relationship exists between the faculty of pharmacy and the university hospitals which facilitates the training and practice of the students in different hospital's departments.

3. Graduate attributes and program ILO's are exceeding the national academic reference standards.

Matrix 1: Comparison between clinical pharmacy graduate attributes and NARS

Attributes of the Graduates	
NARS	**Graduate attributes of the clinical pharmacy program**
1.1. Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations.	1. Handle chemicals, pharmaceutical materials and medicinal plants properly according to their properties and hazards. 2. Classify laboratory waste according to their type and hazards before safe disposal.
1.2. Capable of formulating, preparing pharmaceutical products from different sources and participating in systems for dispensing, storage and distribution of medications.	3. Formulate, prepare and dispense different pharmaceutical dosage forms from different sources. 4. Store pharmaceutical preparations according to good storage practice and distribution.
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	5. Perform analysis of raw materials, pharmaceutical dosage forms, herbal products, biological samples, biotech products according to GMP, GLP, FDA, ICH guidelines and official compendia procedure. 6. Statistical analysis and writing official analysis report.
1.4. Provide information and education services to community and patients about rational use of medications and medical devices	7. Provide counseling services to patients and community about safe use, abuse and misuse of medications. 8. Advice community about storage and disposal of medication 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.	9. Figure out the principles of disease pathophysiology and cooperate with health care professionals in improving the health care services and prevention of diseases.
1.6. Plan, design and conduct research using appropriate methodologies.	10. Design and carry out research project using appropriate methodologies and resources.
1.7. Develop presentation, promotion, marketing, business administration, numeric and computation skills.	11. Improve presentation, promotion, marketing and business administration skills as well as computation and statistics skills.
1.8. Demonstrate capability of communication skills, time management, critical thinking, problem solving,	12. Show effective verbal and nonverbal communication, time management. Problem-

decision-making and team-working.	solving and decision-making skills. 13. Working in team with health care professionals.
1.9. Perform responsibilities in compliance with legal, ethical and professional rules.	14. Aware with all legal and ethical regulations related to pharmacy practice.
1.10.Able to be a life-long learner for continuous improvement of professional knowledge and skills.	15. Improve professional skills through continuous education and self-learning.

Matrix 2: Comparison between clinical pharmacy program ILOs and NARS

Knowledge and Understanding	
NARS	**Educational Program ILOs**
2.1. Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	**a1**. Illustrate the principles of basic sciences (chemistry, mathematics, taxonomy, anatomy, …). **a2** Mention the principles of pharmaceutical sciences and 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.	**a3.** Summarize the physicochemical properties of drugs including kinetics and assessment of chemical and physical stability of active ingredients and additives.
2.3. Principles of different analytical techniques using GLP guidelines and validation procedures.	**a4.** Demonstrate the fundamentals of different analytical techniques and their application in pharmaceutical analysis according to GLP and ICH guidelines.
2.4. Principles of isolation, synthesis, purification, identification and standardization methods of pharmaceutical compounds.	**a5.** Demonstrate the principle of techniques used in isolation, and analysis of pharmaceutical active ingredients and excipients.
2.5. Principles of drug design, development and Synthesis.	**a6.** Illustrate the principle of pharmaceutical compound synthesis, purification, and identification.
2.6. Properties of different pharmaceutical dosage forms including novel drug delivery systems.	**a8.** Describe the characteristics and formulation of different dosage forms as well as different drug delivery systems.
2.7. Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.	**a9.** Determine the principles of various instruments of drug formulation, packaging, and storage.
2.8. Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose modification and bioequivalence studies.	**a10.** Describe the pharmacokinetics, route of administration, and bioavailability of medicine in variable pharmaceutical preparations and application in pharmacy practice.

2.9. Principles of hospital pharmacy including I.V. admixtures, TPN and drug distribution system.	**a11.** Describe the principles of hospital pharmacy and services as I.V. admixtures, total parenteral nutrition (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	**a12.** Outline the principles of public health issues including sources and control of microbial contamination as well as sanitation, disinfection and sterilization methods.
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.	**a13.** Describe the body function in health and disease state and understand correctly the metabolic pathways in human systems, healthy life style as well as general knowledge about molecular biology.
2.12. Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and theirpharmacotherapeutic approaches.	**a15.** Mention the etiology, epidemiology 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	**a16.** Explain the principles of pharmacology including actions, therapeutic uses, misuse, and abuse of medicines, adverse reactions and interactions.
2.14. Principles of clinical pharmacology, pharmacovigilance and the rational use of drugs.	**a17.** Explain the pharmacotherapeutics approaches for various diseases according to clinical protocol.
2.15. Basis of complementary and alternative medicine	**a19**. Outline the properties and chemistry of natural products, complementary and alternative medicine and their application in therapeutics in addition to principles of quality control of herbal products.
2.16. Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.	**a21.** Define the toxic profile of various drugs and other xenobiotics including sources, identification, symptoms, management, control and first aid measures.
2.17. Methods of biostatistical analysis and pharmaceutical calculations	**a22.** Demonstrate methods of biostatistical analysis, biological standardization and pharmaceutical calculations.
2.18. Principles of management including financial and human resources	**a23.** Determine the principles of management elements including human resources and finance
2.19. Principles of drug promotion, sales and marketing, business administration, accounting and pharmacoeconomics	**a24.** Explain the principles of drug promotion, sales and marketing, business administration, accounting and basis of pharmacoeconomics in pharmacy practice.
2.20. Principles of proper documentation and drug filing systems.	**a25.** Demonstrate the basics of documentation and filling systems.
2.21. Regulatory affairs, pharmacy laws and ethics of	**a26.** State the pharmacy laws, ethics and codes of practice

health care and pharmacy profession	in community and its impact on relationship with patient and other healthcare professionals.
	a7. Outline the structural activity relationship (SAR) of group of pharmaceutical compounds and design of new compounds using CADD software. **a14.** Mention different biochemical and metabolism pathways and their correlation with different diseases. **a18.** Illustrate the principles of clinical pharmacology, pharmacotherapy and drug monitoring. **a20.** Draw the basics of macro and microscopical characters of different medicinal plant organs, detection of adulteration as well as, their proper collection, storage and marketing in addition to chemotaxonomic classification of medicinal plants. **a27.** Explain reaction mechanisms utilized in pharmaceutical compounds synthesis. **a28.** Describe the handling and stability of biotechnology and radiolabeled products

Intellectual Skills	
NARS	**Educational Program ILOs**
4.1. Apply pharmaceutical knowledge in the formulation of safe and effective medicines as well as in dealing with new drug delivery systems.	**b1** Apply knowledge to prepare safe and effective medicines for individual patient use.
4.2. Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice.	**b2.** Recognize GLP, GSP, GCP and GPMP 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.	**b3.** Apply qualitative and quantitative analytical, and biological methods for identification, quality control 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.	**b4.** Predict possible physicochemical and biological 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.	**b5.** Select and assesses appropriate methods of extraction, isolation, purification, identification, standardization and formulation of medicines from natural or synthetic origin.

4.6. Apply the principles of bio-informatics and computer-aided tools in drug design.	**b6.** Predict the methods of synthesis and properties of medicinal agents and their relation to molecular structure by applying the principles of bio-informatics and computer aided tools in drug design.
4.7. Apply various principles to determine the characteristics of biopharmaceutical products.	**b7.** Apply information of biotechnology and pharmacoeconomics principles and propose approaches for monitoring and design of medicinal agents of different sources.
4.8. Select and assess appropriate methods of infection control to prevent infections and promote public health.	**b8.** Select 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.	**b9.** Utilize 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.	**b10.** Calculate dosage and dose regimen of medications.
4.11. Assess drug interactions, ADRs and pharmacovigilance	**b11.** Assess drug interactions and adverse drug reactions.
4.12. Apply the principles of pharmacoeconomics in promoting cost/effective pharmacotherapy	**b12.** Recognize the relationship between human body systems, safe, effective and economical use of medicines.
4.13. Analyze and interpret experimental results as well as published literature.	**b13.** Comprehends reliably scientific data published literature and collaborates with others in the pharmacy practice.
4.14. Analyze and evaluate evidence-based information needed in pharmacy practice	**b14**. Apply the information needed in pharmacy practice giving clear advice and critical decisions about patient therapy in cooperation with health team professionals.
	b15. Evaluate evidence-based guidelines involving science, biotechnology and professional principles required in pharmacy practice.

Professional and Practical Skills	
NARS	**Educational Program ILOs**
3.1. Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice	**c1.** Use properly the pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.
3.2. Handle and dispose chemicals and pharmaceutical	**c2.** Handle chemicals and dispose hazardous chemicals

preparations safely	and materials according to safety guidelines.
3.3. Compound, dispense, label, store and distribute medicines effectively and safely	**c3.** Dispense medicines in appropriate dosage forms accurately and safely.
3.4. Extract, isolate, synthesize, purify, identify, and/or standardize active substances from different origins	**c4.** Practice the extraction, identification and standardization of active ingredients from different biological origin.
3.5. Select medicines based on understanding of etiology and pathophysiology of diseases.	**c7**. Select the appropriate medication therapy for a given diseases based on its etiology, pathophysiology, patient medical history, possible interactions and age related factors.
3.6. Monitor and control microbial growth and carry out laboratory tests for identification of infectious and non-infectious diseases	**c9.** Control microbial growth and carry out laboratory tests to identify infectious and non-infectious diseases, control sterilization processes and aseptic procedures.
3.7. Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens.	**c10.** Determine the toxicity profiles of different xenobiotics and detect poisons in biological specimens.
3.8. Apply techniques used in operating pharmaceutical equipment and instruments	**c12.** Operate different pharmaceutical instrumentations and laboratory procedures, in analysis of biological samples and drugs either of herbal or synthetic source.
3.9. Maintain public awareness on rational use of drugs and social health hazards of drug abuse and misuse	**c13.** Undertake risk assessments concerning drug-drug interaction, adverse reaction, toxicity profile and incompatibilities in different pharmaceutical preparations.
3.10. Advise patients and other health care professionals about safe and proper use of medicines	**c14.** Provide patients and health care professionals with advice about safe and proper use of medicine.
3.11. Conduct research studies and analyze the results	**c15.** Perform research studies depending on applying the scientific background to analyze the obtained results.
3.12. Employ proper documentation and drug filing systems	**c16.** Employ proper documentation and drug filling system.
	c5. Synthetize preliminary chemical substances and active constituents of different drug categories. **c6**. Purify and identify the newly synthetize chemical compounds or drugs, detect impurities in different pharmaceutical preparations and assesses their limits. **c8**. Evaluate the selected drug therapy based on patient's progress and laboratory results. **c11**. Practice first aid procedures in an emergency case.

General and Transferable Skills	
NARS	**Educational Program ILOs**
5.1. Communicate clearly by verbal and written means.	**d1.** Interact effectively with patients, the public and health care professionals.
5.2. Retrieve and evaluate information from different sources to improve professional competencies.	**d2.** Retrieve and critically evaluate pharmaceutical information and clinical laboratory data.
5.3. Work effectively in a team.	**d3.** Work effectively in a team in a variety of health care settings.
5.4. Use numeracy, calculation and statistical methods as well as information technology tools.	**d4.** Calculate medicine doses and dosage regimens through skills in numeric, computation methods and application of biological statistics in different field of pharmacy.
5.5. Practice independent learning needed for continuous professional development.	**d5.** Acquire problem solving skills in groups for continuing professional development needs.
5.6. Adopt ethical, legal and safety guidelines.	**d6.** Perform according to professional and moral ethical codes and approaches considering laws of human rights as well as legal and safety guide lines.
5.7. Develop financial, sales and market management skills.	**d7.** Develop financial, sales and market management skills.
5.8. Demonstrate creativity and time management abilities	**d8.** Manage her / his time effectively.
5.9. Implement writing and presentation skills.	**d9.** Apply information technology skills.
5.10. Demonstrate critical thinking, problem-solving and decision-making abilities.	**d10.** Demonstrate critical thinking and decision making abilities in a variety of theoretical and practical situations. **d11.** Provide good advice about balanced diet to promote the efficiency of medication and give hand in poisoning cases.

Curriculum Structure and contents:

Program duration: 5 years.

Program structure:

No. of credit hours:

Lectures: 139 hrs Lab / Exercise: 55 hrs Total: 194 hrs

These 194 credit hours are divided as follows:

University requirements: 7 credit hrs

Faculty requirements: 181 credit hrs

Elective courses: 6 credit hrs

Practical/Field Training: 200 credit hrs

Divided as:

At least 100 credit hours of training in pharmacy setting

At least 100 credit hours of clinical training in a teaching and University hospitals and South Egypt Cancer Institute.

Program levels (in credit hours system): 5 levels / 10 semesters

C- Professional Information

1-Academic standards

Adoption of program curriculum to academic standards and aims

Subject	CR hours	Clin (%)	NARS (%)
1- Basic Sciences	**22**	**11.3**	**10-15**
2- Pharmaceutical Sciences	**73**	**37.6**	**35-40**
3- Medical Sciences	**47**	**24.2**	**15-25**
4- Pharmacy Practice	**25**	**12.9**	**10-15**
5- Health and environmental Sciences	**10**	**5.2**	**5-10**
6- Behavioral and Social Sciences	**8**	**4.1**	**2-4**
7- Pharmacy management, Marketing and Pharmacoeconomics	**3**	**1.6**	**2-4**
8- Elective and complementary courses	**6**	**3.1**	**Up to 8.0 %**
Total	**194**	**100**	

2. Program curriculum structure

Number of studying hours per week in each level of program

	Lectures	Lab	Total	%
Basic Sciences	**15**	**7**	**22**	**11.3**
Pharmaceutical Sciences	**51**	**22**	**73**	**37.6**
Medical Sciences	32	**15**	**47**	**24.2**
Pharmacy Practice	17	**8**	**25**	**12.9**
Health and environmental Sciences	**8**	**2**	**10**	**5.2**
Behavioral and Social Sciences	**7**	**1**	**8**	**4.1**
Pharmacy management, Marketing and Pharmacoeconomics	**3**	**-**	**3**	**1.6**
Elective and complementary courses	**6**	**-**	**6**	**3.1**

Subject	CRHRS			%	
	Lectures	Practical	Total	Clin	NARS
1-Basic Sciences				11.3	10-15
English language (EN 101)	2	-	2		
Botany and medicinal plants (PG 101)	2	1	3		
Cell Biology (MD 102)	1	1	2		
Biophysics (MD 101)	1	1	2		
Physical and inorganic chemistry (PC 101)	2	1	3		
Pharmaceutical organic chemistry (PC 102, 203)	4	2	6		
Mathematics and statistics (MS 101)	2	-	2		
Computer sciences (CS 101)	1	1	2		
Sum	15	7	22		
2- Pharmaceutical Sciences				37.6	35-40
Physical pharmacy (PT 201)	2	1	3		
Pharmacy orientation (PT 202)	2	-	2		
Pharmaceutical organic chemistry (PC 304)	2	1	3		
Pharmaceutical technology (PT607)	2	1	3		
Biopharmaceutics and pharmacokinetics (PT 609)	2	1	3		
Pharmaceutical analytical chemistry (PC 205, 306, 407, 808)	7	4	11		
Medicinal chemistry (PC 509, 610)	4	2	6		
Quality control of herbal drugs (PG 606)	2	1	3		
Pharmacognosy (PG 202, 303)	4	2	6		
Phytochemistry (PG 404, 505)	4	2	6		

Pharmaceutical microbiology (PM 704)	2	1	3		
Pharmaceutical biotechnology (PM 703)	2	1	3		
Phytotherapy (PG 807)	2	1	3		
Pharmaceutical dosage forms (PT 403, 505)	4	2	6		
Radiopharmaceuticals (PP 701)	1	-	1		
Controlled drug delivery (PT 704)	2	-	2		
Clinical nutrition (PP 909)	1	1	2		
Drug interaction (PO 803)	2	-	2		
Medical terminology (EN 302)	2	-	2		
Clinical pharmacokinetics (PP 907)	2	1	3		
Sum	51	22	73		
3-Medical Sciences					
Anatomy (MD 304)	1	1	2		
Histology (MD 203)	2	1	3		
Physiology (MD 305)	3	1	4		
Pathology (MD 608)	2	1	3		
Pathophysiology (MD 507)	2	-	2		
Biochemistry (PB 401, 502)	4	2	6		
Clinical biochemistry (PB 803)	2	1	3	24.2	15-25
Parasitology (MD 406)	1	1	2		
Pharmacology (PO 701, 802)	4	2	6		
Clinical Pharmacolgy (PO 906)	2	1	3		
Therapeutics (PO 905, 007)	4	2	6		
Microbiology and immunology (PM 401)	3	1	4		
Clinical microbiology (PM 502)	2	1	3		
Sum	32	15	47		
4- Pharmacy Practice					
Hospital pharmacy (PP 703)	2	1	3		
Pharmaceutical legislation (PT 404)	1	-	1		
Clinical Pharmacy (PP 702, 805)	4	2	6		
Drug information (PP 015)	1	-	1	12.9	10-15
Dermatology, pediatology, cardiovascular, gastroenterology, and respiratory system diseases (PP 010, 011, 012, 013, 014)	9	5	14		
Sum	17	8	25		
5- Health and Environmental Sciences					
Public health (MD 710)	2	-	2		
First aid and tromas (MD 609)	2	-	2	5.2	5 – 10
Toxicology and forensic chemistry (PO 904)	2	1	3		
Oncology (PP 908)	2	1	3		
Sum	8	2	10		

6- Behavioral and Social Sciences					
Psychology and sociology (HU 302, 903)	3	-	3	4.1	2 – 4
Human rights (HU 201)	2	-	2		
Community pharmacy practice (PT 608)	2	1	3		
Sum	7	1	8		
7- Pharmacy Management, Marketing and Pharmacoeconomics					
Drug marketing (PP 806)	1	-	1	1.6	2 – 5
Pharmacy administration (PT 506)	2	-	2		
Sum	3	-	3		
8- Elective and Complementary Courses (PE)				3.1	2 – 5
Sum	6	-	6		
Total credit hours				**194**	

Summer and clinical training

In addition to the above mentioned courses, the student is required to conduct at least 300 contact hours (100 credit hours) of field training in one of the pharmaceutical settings and 100 credit hours of clinical training in teaching hospitals under the supervision of faculty staff members.

PROGRAMME COURSES:

Table (1)

Semester (1)

Course Title	Course Code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam (hrs)
		Lect	Pract	Total		Period	Pract	Wr.	Oral		
Physical & Inorganic Chemistry	PC 101	2	1	3	Registration	10	25	65	-	100	2
Pharmaceutical Organic chemistry-1	PC102	2	1	3	Registration	10	25	50	15	100	2
Biophysics	MD101	1	1	2	Registration	10	25	65	-	100	1
Botany and medicinal plants	PG 101	2	1	3	Registration	10	25	50	15	100	2
Cell Biology	MD 102	1	1	2	Registration	10	25	65	-	100	1
Mathematics and statistics	MS 101	2	-	2	Registration	10	-	90	-	100	2
English language	EN 101	2	-	2	Registration	10	-	90	-	100	2
Computer sciences	CS 101	1	1	2	Registration	10	25	65	-	100	1
Total		13	6	19						800	

Examination Marks:

Period = Periodical Exam. Pract. = Practical Exam. Wr. = Written Exam.

Table (2)

Semester (2)

Course Title	Course code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam (hrs)
		Lect.	Pract	Total		Period	Pract.	Wr.	Oral		
Pharmaceutical Organic chemistry-2	**PC 203**	**2**	**1**	**3**	PC102	**10**	**25**	**50**	**15**	**100**	**2**
Pharmaceutical Analytical chemistry-1	**PC 205**	**2**	**1**	**3**	PC 101	**10**	**25**	**50**	**15**	**100**	**2**
Pharmacognosy -1	**PG 202**	**2**	**1**	**3**	PG 101	**10**	**25**	**50**	**15**	**100**	**2**
Histology	**MD 203**	**2**	**1**	**3**	MD 102	**10**	**25**	**65**	**-**	**100**	**2**
Physical pharmacy	**PT 201**	**2**	**1**	**3**	PC 101	**10**	**25**	**50**	**15**	**100**	**2**
Pharmacy orientation	**PT 202**	**2**	**-**	**2**	Registration	**10**	**-**	**90**	**-**	**100**	**2**
Human rights	**HU 201**	**2**	**-**	**2**	Registration	**10**	**-**	**90**	**-**	**100**	**2**
Total		**14**	**5**	**19**						**700**	

Table (3)

Semester (3)

Course Title	Course code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam (hrs)
		Lect	Pract	Total		Period	Pract	Wr	Oral		
Pharmaceutical Organic chemistry-3	PC 304	2	1	3	Organic pharmaceutical chemistry-1	10	25	50	15	100	2
Pharmaceutical Analytical chemistry-2	PC 306	2	1	3	Analytical pharmaceutical chemistry-1	10	25	50	15	100	2
Pharmacognosy -2	PG 303	2	1	3	Pharmacognosy -1	10	25	50	15	100	2
Anatomy	MD 304	1	1	2	Registration	10	25	65	-	100	1
Physiology	MD 305	3	1	4	Cell biology	10	25	65	-	100	3
Medical Terminology	EN 302	2	-	2	English language	10	-	90	-	100	2
Psychology	HU 302	2	-	2	Registration	10	-	90	-	100	2
Total		14	5	19						700	

Table (4)

Semester (4)

Course Title	Course code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam. (hrs)
		Lect	Pract.	Total		Period.	Pract	Wr	Oral		
Biochemistry -1	PB 401	2	1	3	Organic pharmaceutical chemistry-2	10	25	50	15	100	2
Phytochemistry-1	PG 404	2	1	3	Pharmacogosy-2	10	25	50	15	100	2
Instrumental Analysis	PC 407	1	1	2	Analytical pharmaceutical chemistry -2	10	25	50	15	100	1
General Microbiology and Immunology	PM 401	3	1	4	Cell biology	10	25	50	15	100	3
Parasitology	MD 406	1	1	2	Cell biology	10	25	50	15	100	1
Pharmaceutical dosage forms-1	PT 403	2	1	3	Physical pharmacy	10	25	50	15	100	2
Pharmacy legislation	PT 404	1	-	1	Registration	10	-	90	-	100	1
Total		12	6	18						700	

Table (5)

Semester (5)

Course Title	Course code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam. (hrs)
		Lect.	Pract	Total		Period	Pract	Wr.	Oral		
Pharmacology-1	PO 701	2	1	3	Physiology	10	25	50	15	100	2
Clinical microbiology	PM 502	2	1	3	General microbiology & immunology	10	25	50	15	100	2
Pharmaceutical dosage forms-2	PT 505	2	1	3	Physical pharmacy	10	25	50	15	100	2
Biochemistry-2	PB 502	2	1	3	Biochemistry -1	10	25	50	15	100	2
Phytochemistry-2	PG 505	2	1	3	Pharmacognosy-1	10	25	50	15	100	2
Pathology	MD 608	2	1	3	Registration	10	25	50	15	100	2
Pharmacy Administration	PT 506	2	-	2	Registration	10	-	90	-	100	2
Total		14	6	20						700	

Table (6)

Semester (6)

Course Title	Course code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam. (hrs)
		Lect.	Pract	Total		Period.	Prac	Wr.	Oral		
Medicinal chemistry-1	PC 509	2	1	3	Pharmaceutical Organic chemistry-2	10	25	50	15	100	2
Pharmaceutical technology	PT 607	2	1	3	Registration	10	25	50	15	100	2
Community pharmacy practice	PT 608	2	1	3	Registration	10	25	50	15	100	2
Biopharmaceutics and pharmacokinetics	PT 609	2	1	3	Pharmaceutical dosage forms-2	10	25	50	15	100	2
Quality Control of Herbal Drug	PG 606	2	1	3	Pharmacognosy-1	10	25	50	15	100	2
Pathophysiology	MD 507	2	-	2	Physiology	10	-	75	15	100	2
Tromas and First Aid	MD 609	2	-	2	Registration	10	-	75	15	100	2
Total		14	5	19						700	

Table (7)

Semester (7)

Course Title	Course code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam (hrs)
		Lect.	Pract	Total		Period	Pract	Wr.	Oral		
Medicinal chemistry-2	PC 610	2	1	3	Pharmaceutical organic chemistry-2	10	25	50	15	100	2
Radiopharmaceuticals	PP 701	1	-	1	Registration	10	-	90	-	100	1
Clinical pharmacy -1	PP 702	2	1	3	Registration	10	25	50	15	100	2
Hospital pharmacy	PP 703	2	1	3	Registration	10	25	50	15	100	2
Controlled drug delivery systems	PT 704	2	-	2	Pharmaceutical dosage forms-2	10	-	75	15	100	2
Public health and preventive medicine	MD 710	2	-	2	Clinical Microbiology	10	-	75	15	100	2
Pharmaceutical Biotechnology	PM 703	2	1	3	Registration	10	25	50	15	100	2
Pharmaceutical microbiology	PM 704	2	1	3	Registration	10	25	50	15	100	2
Total		15	5	20						800	

Table (8)

Semester (8)

Course Title	Course code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam (hrs)
		Lect.	Pract	Total		Period	Pract	Wr.	Oral		
Pharmacology -2	PO 802	2	1	3	Pharmacology -1	10	25	50	15	100	2
Clinical pharmacy -2	PP 805	2	1	3	Clinical pharmacy-1	10	25	50	15	100	2
Phytotherapy	PG 807	2	1	3	Pharmacognosy-1	10	25	50	15	100	2
Pharmaceutical analysis and quality control	PC 808	2	1	3	Pharmaceutical analytical chemistry-2	10	25	50	15	100	2
Clinical biochemistry	PB 803	2	1	3	Biochemistry-2	10	25	50	15	100	2
Drug marketing	PP 806	1	-	1	Registration	10	-	90	-	100	1
Drug interactions	PO 803	2	-	2	Pharmacology-2	10	-	75	15	100	2
Elective course	PE	2	-	2	Registration	10	-	75	15	100	2
Total		15	5	20						800	

Table (9)

Semester (9)

Course Title	Course code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam. (hrs)
		Lect.	Pract	Total		Period.	Pract	Wr.	Oral		
Toxicology and forensic chemistry	PO 904	2	1	3	Pharmacology -2	10	25	50	15	100	2
Therapeutics -1	PO 905	2	1	3	Pharmacology-2	10	25	50	15	100	2
Clinical pharmacokinetics	PP 907	2	1	3	Biopharmaceutics and pharmacokinetics	10	25	50	15	100	2
Oncology	PP 908	2	1	3	Pathology, pharmacology-2	10	25	50	15	100	2
Clinical nutrition	PP 909	1	1	2	Biochemistry-2	10	25	50	15	100	1
Clinical pharmacology	PO 906	2	1	3	Pharmacology -2	10	25	50	15	100	2
Sociology	HU 903	1	-	1	Registration	10	-	90	-	100	1
Elective course	PE	2	-	2	Registration	10	-	75	15	100	2
Total		14	6	20						800	

Table (10)

Semester (10)

Course Title	Course code	Credit hours			Prerequisite	Examination Marks*				Total. marks	Final Exam (hrs)
		Lect.	Pract.	Total		Period	Pract	Wr.	Oral		
Therapeutics -2	PO 007	2	1	3	Pharmacology-2	10	25	50	15	100	2
Treatment of dermatological and reproductive diseases	PP 010	1	1	2	Pathology, pharmacology-2	10	25	50	15	100	1
Treatment of Pediatrics diseases	PP 011	2	1	3	Pathology pharmacology-2	10	25	50	15	100	2
Treatment of Cardiovascular diseases	PP 012	2	1	3	Pathology pharmacology-2	10	25	50	15	100	2
Gastroenterology	PP 013	2	1	3	Pathology pharmacology-2	10	25	50	15	100	2
Treatment of Respiratory system diseases	PP 014	2	1	3	Pathology pharmacology-2	10	25	50	15	100	2
Drug information	PP 015	1	-	1	Pharmacology -2 Clinical pharmacy -2	10	-	75	15	100	1
Elective course	PE	2	-	2	Registration	10	-	75	15	100	2
Total		14	6	20						800	

Elective Courses

The faculty of Pharmacy offers elective courses from which the students are free to select six credits.

	Course Code	Course Title	Credit Hours		
			L	P	Total
1	PC E12	Advanced Pharmaceutical Analysis -Spectroscopy	2	-	2
2	PG E8	Alternative Medicinal Therapies	2	-	2
3	PT E11	Applied Industrial Pharmacy	2	-	2
4	PT E12	Good Manufacturing practices	2	-	2
5	PT E13	Cosmetic Preparations	2	-	2
6	PM E6	Antimicrobial Agents	2	-	2

* Student chooses one elective course in each semester starting from the 8th semester.

ILOs Covered by the Program:

	Course Title	Course Code	Program ILOs Covered (By No.)
1	Physical & inorganic chemistry	PC 101	**a1, a3, b1, b4, b5, c2, d1, d3**
2	Pharmaceutical organic chemistry-1	PC102	**a1, a6, b6, c2, c5, c6, d3, d10**
3	Biophysics	MD101	**a3, a28, b15, c15, d3, d9**
4	Botany and medicinal plants	PG 101	**a1, a2, a20, b2, c2, d9**
5	Cell Biology	MD 102	**a1, a13, b12, c15, d3**
6	Mathematics and statistics	MS 101	**a1, a22, b3, b13, c15, d4**
7	Computer Science	CS 101	**a1, b3, b13, c15, c16, d4, d9**
8	English language	EN 101	**a25, b13, c1, d1, d3, d9**
9	Pharmaceutical organic chemistry-2	PC 203	**a1, a6, a27, b6, c5, c6**
10	Pharmaceutical analytical chemistry-1	PC 205	**a1, a2, a4, a5, b3, c2,c4, c12, d3, d5, d8, d10**
11	Pharmacognosy-1	PG 202	**a1, a20, b5, c4, d9**
12	Histology	MD 203	**a13, b12, c15**
13	Physical pharmacy	PT 201	**a2, a3, c12**
14	Pharmacy orientation	PT 202	**a2, a26, b15**
15	Human rights	HU 201	**a1, a26, d6**
16	Pharmaceutical organic chemistry-3	PC 304	**a2, a6, a27, b2, b6, c2, c5, c6, d3**
17	Pharmaceutical analytical chemistry-2	PC 306	**a1, a2, a4, a5, b3, b5, c2, c12, d3, d8, d9, d10**
18	Pharmacognosy-2	PG 303	**a1, a20, b1, b13, b14, c1, c2, c4, c14, d1, d2, d3, d5, d8, d9, d10**
19	Anatomy	MD 304	**a1, a13, b12, c7, d5**
20	Physiology	MD 305	**a13, a15, b12, c1, c7, d2**
21	Medical terminology	EN 302	**a2, b14, c1, d9**
22	Psychology	HU 302	**a23, b1, d1, d6**
23	Biochemistry-1	PB 401	**a1, a14, b9, c1, d10**
24	Phytochemistry-1	PG 404	**a5, a6, a7, a19, b3, b5, c2, c4, c12, d5, d8, d10**
25	Instrumental analysis	PC 407	**a4, a5, b3, b5, c4, c12, d9**
26	General microbiology and immunology	PM 401	**a1, a2, a12, b15, c2, c7, d2**

27	Parasitology	MD 406	**a12, a15, b8, c7, c8, d2, d3, d10**
28	Pharmaceutical dosage forms-1	PT 403	**a2, a8, b1, b10, c3, c12, d4**
29	Pharmacy legislation	PT 404	**a26, c14, d6**
30	Medicinal chemistry-1	PC 509	**a3, a6, a7, b3, b6, c2, c6, c15, d5, d8, d10**
31	Clinical microbiology	PM 502	**a12, a15, b8, b13, c2, c9, d1, d2, d3, d10**
32	Pharmaceutical dosage forms-2	PT 505	**a2, a8, a9, b2, c3, c12, d4**
33	Biochemistry-2	PB 502	**a13, a14, b15, c8, c12, d2, d10**
34	Phytochemistry-2	PG 505	**a5, a6, a7, a19, b3, b5, c2, c4, c12, d5, d8, d10**
35	Pathophysiology	MD 507	**a13, a14, a15, b12, b13, c7, d1, d5**
36	Pharmacy administration	PT 506	**a23, a24, b7, d7, d8**
37	Medicinal chemistry-2	PC 610	**a6, a10, b3, b6, c2, c5, c15, d1, d5, d10**
38	Pharmaceutical technology	PT 607	**a9, b2, c16, d9**
39	Community pharmacy practice	PT 608	**a2, b1, b12, c1, c13, c14, d1, d3, d7**
40	Biopharmaceutics and pharmacokinetics	PT 609	**a10, a22, a25, b7, b10, b15, c8, c15, d2, d4**
41	Quality Control of herbal drugs	PG 606	**a2, a3, a4, a5, a19, a22, b2, b3, b5, b13, c1, c2, c4, c12, c14, d2, d3, d5, d6, d8, d9, d10**
42	Pathology	MD 608	**a1, a13, a14, a15, b12, b13, c1, c7, d1, d2, d3, d5**
43	Trauma and first aid	MD 609	**a1, b14, c11, d5**
44	Pharmacology-1	PO 701	**a10, a15, a16, a17, a18, b9, b11, b13, b14, c1 c7, d1, d3, d5, d11**
45	Radiopharmaceuticals	PP 701	**a3, a28, b4, b14, d3, d6**
46	Clinical pharmacy -1	PP 702	**a2, a15, a17, b1, b4, b12, c1, c14, d1, d3**
47	Hospital pharmacy	PP 703	**a11, a25, b4, b10, c1, c8, c16, d1, d2, d3, d4**
48	Controlled drug delivery system	PT 704	**a8, b1, b4, b12, b15, d5,d10**
49	Public health and preventive medicine	MD 710	**a12, a13, b8, b13, c15, d6, d9**
50	Pharmaceutical biotechnology	PM 703	**a13, b5, b7, c4, d9, d10**
51	Pharmaceutical microbiology	PM 704	**a12, a15, b8, b14, c2, c7, c9, d2, d3**
52	Pharmacology-2	PO 802	**a15, a16, a18, a21, b1, b9, b10, b11, b12, c3, c7, c8, c14, d1, d2, d4, d5, d10, d11**
53	Clinical pharmacy-2	PP 805	**a17, b1, b13, b14, c8, c13, c15, d1, d2, d3, d5**
54	Phytotherapy	PG 807	**a9, a19, b1, b4, b12, b13, b14, c3, c7, c8, c13, c14, d4, d6, d11**
55	Pharmaceuticals analysis and quality	PC 808	**a1, a4, a6, b3, b13, c2, c6, c12, d1, d3, d5,**

	control		**d8, d9, d10**
56	Clinical biochemistry	PB 803	**a13, a14, a15, b13, b14, c2, c9, c11, c12, c15, d1, d2, d3, d6**
57	Drug marketing	PP 806	**a23, a24, b16, c17, d5, d7,d9**
58	Drug interactions	PO 803	**a16, a21, b4, b11, b14, c13, d1, d3, d5, d10**
59	Toxicology and forensic chemistry	PO 904	**a16, a21, b11, b13, c2, c10, c11, c13, c14, d2, d3, d6, d11**
60	Therapeutics-1	PO 905	**a15, a17, b9, b12, c7, c13, c15, d2, d3, d10**
61	Clinical pharmacokinetics	PP 907	**a22, b10, b14, c15, c16, d2, d3, d4**
62	Oncology	PP 908	**a11, a15, a21, b10, b12, b14, c10, c13, d1, d2, d3, d4**
63	Clinical nutrition	PP 909	**a13, b10, b14, c1, c8, d10, d11**
64	Clinical pharmacology	PO 906	**a17, a18, b9, b11, c13, c14, d3, d5, d10**
65	Sociology	HU 903	**a23, a26, b14, c14, d1, d3, d6, d10**
66	Therapeutics-2	PO 007	**a15, a18, b9, b13, c7, c15, d2, d3, d5, d10**
67	Treatment of dermatological and reproductive diseases	PP 010	**a12, a15, b8, b9, c1, c7, c14, d1, d3, d5, d9**
68	Treatment of pediatric diseases	PP 011	**a15, b8, b9, c7, c14, c16, d1, d3, d5**
69	Treatment of cardiovascular Diseases	PP 012	**a15, b8, b9, c1, c7, c14, d1, d3, d5, d9**
70	Gastroenterology	PP 013	**a15, b8, b9, c1, c7, c14, d1, d3, d5, d9**
71	Treatment of respiratory system diseases	PP 014	**a15, b8, b9, c1, c7, c14, d1, d3, d5, d9**
72	Drug information	PP 015	**b4, b11, b14, d3, d6, d9**

Elective Courses

	Course Title	Course Code	Program ILOs Covered (By No.)
1	Advanced Pharmaceutical Analysis - Spectroscopy	PC E12	**a4, a5, b3, c12, d8, d10**
2	Alternative Medicinal Therapies	PG E8	**a1, a19, b1, b5, b9, b12, b14, c7, c13, c14, d1, d3, d5, d11**
3	Production & Manufacture of Medicinal Plants	PG E9	**a19, a20, b5, c4, d5, d8, d9**
4	Chromatography and Separation Techniques	PG E10	**a1, a4, a5, b3, b5, c4, c6, c12, c15, d5, d8, d9**
5	Applied Industrial Pharmacy	PT E11	**a8, a9, b1, c1, c16, d6**
6	Good Manufacturing Practices	PT E12	**a8, a9, b2, c1, c16, d6**
7	Cosmetic Preparations	PT E13	**a2, a26, b3, dl, d6, d10**
8	Antimicrobial Agents	PM E6	**a2, a12, a17, b7, b8, c12, c16, d1, d3, d9**

5) Program admission requirements:

The faculty complies with the admission regulations and requirements of the Egyptian Supreme Council of Universities (ESCU). Candidate should have obtained the general certificate of secondary education (scientific section) or an equivalent certificate from a foreign institute recognized by ESCU. Admission of graduates from the Faculties of Medicine, Veterinary Medicine, Dentistry, Nursing, Science and Agriculture **has canceled.**

6) Assessment:

- Student performance is assessed by both course work and examination at the end of each course.
- Methods of assessments include written oral and practical examination, research paper, course assignments, periodical assessment, presentation, library exercise and practical work.

Method of assessment	Weight of assessment		
	Group A	Group B	Group C
Written examination	**50**	**65**	**90**
Practical examination and activities	**25**	**25**	**--**
Periodical examination	**10**	**10**	**10**
Oral examination	**15**	**--**	**--**
Total	**100**	**100**	**100**

Group A: program courses taught through lecture and practical are assessed by all methods.

Group B: program courses taught through lecture and practical are assessed by all methods except oral examination.

Group C: program courses taught through lectures only are assessed by written examination.

Relation between ILO's and student assessment methods

ILO's	Methods of achievement and assessment
Knowledge and understanding skills	Written, periodical and oral examination
Intellectual skills	Written, periodical, oral examination and summer training
Professional and practical skills	Practical examination and summer training
General and transferable skills	Oral examination, presentation and assignments

- Grades are measure of the performance of a student in an individual course.

Grade expression	Grade scale	Grade point average value (GPA)	Numerical scale 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%**

- Grade point average (GPA)
  - The University calculates for each student, both at the end of each grading period and cumulatively.

- A grade point average (GPA) based on the ratio of points earned divided by the number of credits earned with grades of A-F (including pluses and minuses).
- Both the periodic and cumulative GPA appears on each student's record.
- The semester GPA of the student is the average of the grade points acquired in the courses passed in that particular semester.
- Registration symbols that do not carry grade points or credit:
    1. S: represents achievement that is satisfactory.
    2. U: represents achievement that is unsatisfactory.
    3. T: Transfer, indicates credit transferred from another institution.
    4. W: withdrawal prior to deadline indicates a student has officially withdrawn from a course.

- Failure in courses:
    1. Student who fails to attend the final examination.
    2. Student who fails to achieve 30% of the marks in the final written examination.
    3. Student who fails to achieve 60% of the total marks.

7) Regulations for progression and program completion:

- Livery student is required to attend 75% of lectures and laboratory sections continuously.
- Selection of courses for any given years is conditional on the successful completion of the prerequisite course of the proceeding academic year.
- Student who fails to pass a required course will be allowed to repeat this course.
- Student who fails to pass an elective course will be allowed to repeat this course or register for another elective course.

8) Academic difficulty:

- A student who fails to maintain a minimum cumulative GPA of "1" for six consecutive semesters or for a total of ten semesters will be dismissed from the faculty.
- Students are allowed to repeat course with a grade "D" under supervision of an academic advisor in order to improve their cumulative GPA.

- The higher grade of any repeated course is used in GPA calculation**.**

9) Graduation:

Students receive the bachelor of pharmaceutical science degree (clinical pharmacy) on completion of:

1. The requisite number of credit hours (194 credit hours) with a cumulative GPA equivalent to 1 or above.
2. At least 300 hrs (100 credit hr) of training in pharmacy setting.
3. At least 200 hrs (100 credit hr) of training in university hospital.

10) Evaluation of program intended learning outcomes:

Evaluator	Tool	Sample
1. Senior students	Questionnaire	Included
2. Alumni	Discussions	
3. Stakeholders (Employers)	Questionnaire	
4. External Evaluator(s) (External Examiner(s))	Prof. Dr. Mona A. Hetta Prof. Dr. Mahmoud B. Ashmawy	Reports
5. Internal Evaluators	Prof. Dr. Mahmoud El-Badry Dr. Mohammed M. Abd El-latif	Reports