



Faculty of Pharmacy

Program Specification

Bachelor of Pharmacy

(Clinical Pharmacy)

(2018/ 2019)

updated by

Curriculum Committee under the supervision of

Assis. Prof. Gehan Balata

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Specifications of Pharmacy Program (clinical pharmacy)

A. Basic Information:

- 1. Program Title:** Bachelor of Pharmacy (clinical pharmacy).
- 2. Program Type:** Single, credit hour system
- 3. Faculty / University:** Faculty of Pharmacy, Zagazig University.
- 4. Department (s):**
 - a) Departments affiliated to faculty of pharmacy**
 - Department of Analytical Chemistry
 - Department of Biochemistry
 - Department of Pharmaceutics
 - Department of Medicinal Chemistry
 - Department of Microbiology & Immunology
 - Department of Pharmaceutical Organic Chemistry
 - Department of Pharmacognosy
 - Department of Pharmacology & Toxicology
 - Department of Pharmacy Practice
 - b) Departments not affiliated to faculty of pharmacy:**
 - Histology, Anatomy Oncology, Pathology, Cardiology, Pediatrics, chest, dermatology and virology departments (Faculty of Medicine)
 - Mathematics department (Faculty of Science)
 - English Language department (Faculty of Education)
 - Accounting & Administration department (Faculty of Commerce)
 - Faculty of Law

- Psychology department (Faculty of Education)

5. Coordinators:

-Prof. Amal El-Gendi “Program coordinator”

6. Date of Program specifications approval:

- Last date of Program specifications approval: 2011

N.B.: This program specification document was reviewed and updated according to NARS, 2009. The specification was approved by the Faculty council No. 718, 10/12/2018.

7. External Evaluator:

Prof. Mahmoud Bakr Al-Ashmawi, Department of Pharmaceutical Chemistry, Mansoura University

B. Professional Information:

1. Program Aims:

The faculty of pharmacy, Zagazig University, undergraduate program is a five years pharmacy education offering a Bachelor's degree in pharmacy (clinical pharmacy). This educational Program aims at providing students with knowledge, skills and abilities needed to practice the pharmacy profession effectively in various settings including community pharmacies, hospitals, industrial and research institutions, forensic, services, biomedical laboratories, cosmetic industry and governmental health institutions. For that purpose, students receive basic practical training to make them eligible for licensure as pharmacists and clinical training to qualify them to serve as pharmacy practitioners involved in medicine use and pharmaceutical care through reviewing and monitoring patients' medication regimen.

The educational aims of the Program (clinical pharmacy) are summarized as follows:

1. Provide the community with highly qualified, professional, skilled, motivated and ethical pharmacists based on the national academic reference standards (NARS, 2009).
2. Perform responsibilities in clinical pharmacy practice concerning preparation of patient medication history charts, monitoring the patient's response to the current medication, increasing the knowledge about the disease and their drug therapy, participation in medical emergencies, and provision of consultation in various medical areas.
3. Provide information and awareness services to the community and the patients concerning medication and medical devices.
4. Graduate pharmacist who embrace the knowledge in areas related to the design, formulation, production, computation, management, promotion, and marketing of pharmaceutical products and capable of participating in different drug research fields.
5. Implement the principles of GLP and GPMP to different qualitative and quantitative analytical techniques to assure quality of raw materials, procedures and pharmaceutical products
6. Demonstrate communication skills, time management, critical thinking, problem solving, the ability to work under pressure, decision making and team working.
7. Encourage life long learning and evidence based medicine and practices.

Consistency of the program aims with
the mission of Faculty of Pharmacy

Faculty mission	Program aims
<p>The faculty of Pharmacy, Zagazig University aims to:</p> <ul style="list-style-type: none">•provide the local and regional community highly qualified, multidisciplinary and professional pharmacists with ethical values	<ol style="list-style-type: none">1. Provide the community with highly qualified, professional, skilled, motivated and ethical pharmacists based on the national academic reference standards (NARS, 2009).2. Perform responsibilities in clinical pharmacy practice concerning preparation of patient medication history charts, monitoring the patient's response to the current medication, increasing the knowledge about the disease and their drug therapy, participation in medical emergencies, and provision of consultation in various medical areas.8. Demonstrate communication skills, time management, critical thinking, problem solving, the ability to work under pressure, decision making and team working.9. Encourage life long learning and evidence based medicine and practices.

•able to participate in the development of industry and quality assurance	4. Graduate pharmacist who embrace the knowledge in areas related to the design, formulation, production, computation, management, promotion, and marketing of pharmaceutical products and capable of participating in different drug research fields. 5. Implement the principles of GLP and GPMP to different qualitative and quantitative analytical techniques to assure quality of raw materials, procedures and pharmaceutical products
•contribute to a distinguished health service to the society	3. Provide information and awareness services to the community and the patients concerning medication and medical devices.

2. Intended Learning Outcomes (ILO's):

A. Knowledge and understanding:

[A1] Illustrate the principles of organic chemistry, analytical chemistry, biophysics, biology, and mathematical sciences.

[A2] Mention the principles of pharmaceutical sciences.

[A3] Explain the principles of medical sciences including: physiology, histology, anatomy, biochemistry, pharmacology, therapeutics, parasitology, pathology medical microbiology, immunology and virology.

[A4] Outline the fundamentals of management, financial and human resources, drug promotion, sales and marketing, business administration, accounting, and pharmacoeconomic as well as the field of social, behavioral and environmental sciences and health policy relevant to pharmacy.

[A5] Describe the physical and chemical properties of active and inactive chemicals (synthetic or natural) and their effect on the design and formulation of pharmaceutical compounds.

[A6] Summarize physico-chemical properties of medicines, biological products and radio-pharmaceuticals focusing on thermodynamics, chemical kinetics and assessment of their chemical and physical stabilities.

[A7] List the fundamentals of different analytical techniques and its application in pharmaceutical chemistry, including good laboratory practice (GLP).

[A8] Illustrate the basics of separation, synthesis, purification, identification and standardization methods of biologically active compounds.

[A9] Outline the concepts of pharmaceutical chemistry including structures and reactions of biologically active molecules, and the design of new drugs using computer-aided drug design.

[A10] Describe the characters and the formulation of different dosage forms, including controlled, targeted and advanced drug delivery systems.

[A11] Identify good pharmaceutical manufacturing practice (GPMP) and quality assurance in different pharmaceutical processes (production, packaging, labeling and distribution)

[A12] Explain pharmacokinetics models and pharmacokinetic following different routes of administration, bioavailability and bioequivalence.

[A13] Outline the principles of hospital pharmacy, including dispensing, hospital formulary, radiopharmaceuticals, total parenteral nutrition, I.V. admixtures, drug monitoring, adverse effects and dose adjustment.

[A14] Specify the basics of public health, the art of preventing disease, promoting health, raising public awareness for the safe use and disposal of medicine.

[A15] List the different methods of sterilization, sterility testing and their application in microbiological quality control of pharmaceutical products.

[A16] Demonstrate the principles of normal and abnormal bodily functions in healthy and diseased states.

[A17] Illustrate genomics and different biochemical pathways regarding their correlation with different diseases.

[A18] Describe the structure of the human body and its component organs and cells, Causes, development, and consequences of diseases.

[A19] List the etiology, epidemiology, treatment and control of microbial and parasitic infection and host immune response to such infections.

[A20] Specify laboratory diagnosis of different diseases.

[A21] Determine pharmacotherapeutic approaches.

[A22] Illustrate the mechanisms of drug action, and the therapeutic uses, adverse reactions and contraindications.

[A23] Determine the principles of clinical pharmacology, impact of drug interactions on pharmacotherapy for various diseases, and pharmacovigilance.

[A24] Categorize the herbal preparations and the nutritional supplements with emphasis on disease prevention and health promotion

[A25] Identify the teratogenicity, toxicity and poisoning of common drugs, chemicals, radioactive materials, natural toxins, including: sources, identification, handling, symptoms, management and treatment.

[A26] Outline the fundamentals of first aid, including basic life support, shock, medical emergency, rescue and transportation.

[A27] Demonstrate the basic understanding of pharmaceutical calculations, biostatistical analysis and biological standardization.

[A28] Mention the principles of management, capital requirement, financial and human resources, purchasing and financing new pharmacy.

[A29] Describe drug marketing, advertising, interpersonal communication, promotions, business administration, accounting and pharmacoeconomics.

[A30] Define the concepts and the principles of clinical pharmacy practice, including maintenance of patient profiles, proper documentation and drug filing.

[A31] State the laws that govern and affect pharmacy practice, ethical principles and moral rules of pharmacy profession.

B. Professional and practical skills:

[B1] Use effectively the medical and pharmaceutical terminologies, medical abbreviations, idioms, suffixes and prefixes.

[B2] Handle and dispose chemical and pharmaceutical materials safely with application of good laboratory practice (GLP) principles.

[B3] Use the chemical and the pharmaceutical materials properly either in drug manufacture, formulation, design, labeling, storing and distribution of medicinal agents with application of good manufacturing practice (GMP) principles.

[B4] Assess herbal drugs for the determination of drug adulteration, controlling the quality of produced medicinal agents, and discovering new drug entities.

[B5] Apply different methods of analysis of raw materials, inorganic substances and medicinal.

[B6] Detect, isolate, purify, and predict the method of synthesis of any chemical entity belonging to certain drug class

[B7] Select medicine in accordance with understanding of disease etiology and pathophysiology.

[B8] Monitor, safe handling of biological specimens and diagnosis of microbial and parasitic infections microscopically, biochemically and serologically.

[B9] Assess toxicity profile, including diagnostic testing and poison detection in biological samples

[B10] Perform standard industrial and/or pharmaceutical instrumentation and laboratory procedures in quality control of pharmaceuticals.

[B11] Apply the relevant knowledge to health care professionals and patients concerning awareness on rational use of drugs and social health hazards of drug abuse and misuse.

[B12] Apply the relevant knowledge to health care, social care professionals and patients for the safe and effective use of medicine.

[B13] Construct research studies and analyze the results.

[B14] Utilize excellent management of medicines focusing on clinical pharmacy, drug information, uses, adverse reactions, toxicity profiles, maximal and clinical effectiveness and clinical laboratory data.

C. Intellectual Skills:

[C1] Reconstruct the knowledge of pharmaceutical sciences (safe and effective medicine, new drug delivery system), in practice settings.

[C2] Comprehend good laboratory practice (GLP), (GPMP), good storing practice (GSP) and good clinical practice (GCP) guidelines in pharmacy practice.

[C3] Design qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations.

[C4] Solve problems concerning incompatibilities during drug dispensing

[C5] Develop the proper analytical procedures for the standardization of any chemical entity.

[C6] Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.

[C7] Apply the principles of bio-informatics and computer- aided tools in drug design.

[C8] summarize different molecular genetic techniques to produce and improve biopharmaceutical products from living organisms.

[C9] Assess and select the most appropriate method for infection control.

[C10] Employ the knowledge concerning different microbial and parasitic diseases for promotion of community health.

[C11] Integrate the knowledge of physiology, pharmacology, and toxicology in the proper selection and use of drug in various disease conditions.

[C12] Calculate dosage and dose regimen of medications as well as interpretation, compounding and dispensing of prescriptions.

[C13] Justify the knowledge of pharmacology and toxicology in the assessment of drug-drug, drug-food, drug-smoking and drug- environment interaction, and in the proper selection and use of drug in various disease conditions.

[C14] Use principles of pharmacoeconomics and marketing information for promoting cost/ effective pharmacotherapy.

[C15] Analyze information needed in pharmacy practice supporting the decision making concerning health promotion, disease prevention and encouraging self-care.

[C16] Use the information needed in pharmacy practice, giving clear advice and critical decisions about patient's state, in co-operation with other health team professionals.

D. General and transferable skills:

[D1] Interact effectively with patients, the public and health care professionals, either by writing or orally.

[D2] Perform online computer search to develop information technology skills and knowing how to retrieve information from a variety of sources.

[D3] Implement tasks as a member of a team.

[D4] Apply biological statistics in different fields of pharmacy; also use math and statistics methods including differentiation, exponential, logarithmic, and trigonometric functions and integration in pharmacy practice.

[D5] Practice major applications of software, such as; word, spreadsheets, database, presentations, graphics and internet.

[D6] Stay up-to-date with the recent pharmaceutical findings and development in pharmacy profession through independent lifelong continuing education.

[D7] Adopt ethical, legal and safety guidelines.

[D8] Develop management skills including financial sales and marketing.

[D9] Manage time as evidenced by the ability to plan and implement efficient mode of working.

[D10] Present various information and arguments clearly and correctly either by writing or orally.

[D11] Develop critical thinking, problem solving and decision making skills.

**Matrix1: Comparisons of Faculty Program aims with the National
Academic Reference Standard, 2009**

Attributes of the graduates (NARS, 2009)	Program aims
1.1. Handle chemicals and pharmaceutical products effectively and safely with respect to relevant laws and legislations	5.Implement the principles of GLP and GPMP to different qualitative and quantitative analytical techniques to assure quality of raw materials, procedures and pharmaceutical products
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.	
1.2. Capable of formulating, preparing pharmaceutical products from different sources and participating in systems for dispensing, storage and distribution of medications	4.Graduate pharmacist who embrace the knowledge in areas related to the design, formulation, production, computation, management, promotion, and marketing of pharmaceutical products and capable of participating in different drug research fields.
1.6. Plan, design and conduct research using appropriate methodologies	
1.7. Develop presentation, promotion, marketing, business administration, numeric and computation skills.	
1.4. Provide information and education services to community and patients about rational use of medications and medical devices.	3.Provide information and awareness services to the community and the patients concerning 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	2.Perform responsibilities in clinical pharmacy practice concerning preparation of patient medication history charts, monitoring the patient's response to the current medication, increasing the knowledge about the disease and their drug therapy, participation in medical emergencies, and provision of consultation in various medical areas.
1.8. Demonstrate capability of communication skills, time management, critical thinking, problem solving, decision-making and team-working.	6.Demonstrate communication skills, time management, critical thinking, problem solving, the ability to work under pressure, decision making and team working.
1.9. Perform responsibilities in compliance with legal, ethical and professional rules.	1.Provide the community with highly qualified, professional, skilled, motivated and ethical pharmacists based on the national academic reference standards (NARS, 2009).
1.10. Able to be a life-long learner for continuous Improvement of professional knowledge and skills.	7.Encourage life long learning and evidence based medicine and practices

**Matrix2: Comparison between the Educational Program Intended
Learning Outcomes ILOs and the National Academic Reference
Standards, 2009 (NARS)**

<i>NARS</i>	<i>Educational Program ILOs</i>
1. Knowledge and Understanding	
2.1 Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	<p>[A1] Illustrate the principles of organic chemistry, analytical chemistry, biophysics, biology, and mathematical sciences.</p> <p>[A2] Mention the principles of pharmaceutical sciences.</p> <p>[A3] Explain the principles of medical sciences including: physiology, histology, anatomy, biochemistry, pharmacology, therapeutics, parasitology, pathology medical microbiology, immunology and virology.</p> <p>[A4] Outline the fundamentals of management, financial and human resources, drug promotion, sales and marketing, business administration, accounting, and pharmacoeconomic as well as the field of social, behavioral and environmental sciences and health policy relevant to pharmacy.</p>
2.2 Physical-chemical properties of various substances used in preparation of medicines including inactive and active ingredients as well as biotechnology and radio-labeled products.	<p>[A5] Describe the physical and chemical properties of active and inactive chemicals (synthetic or natural) and their effect on the design and formulation of pharmaceutical compounds.</p> <p>[A6] Summarize physico-chemical properties of medicines, biological products and radio-pharmaceuticals focusing on thermodynamics, chemical kinetics and assessment of their chemical and physical stabilities.</p>

2.3 Principles of different analytical techniques using GLP guidelines and validation procedures	[A7] List the fundamentals of different analytical techniques and its application in pharmaceutical chemistry, including good laboratory practice (GLP).
2.4 Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	[A8] Illustrate the basics of separation, synthesis, purification, identification and standardization methods of biologically active compounds.
2.5 Principles of drug design, development and synthesis.	[A9] Outline the concepts of pharmaceutical chemistry including structures and reactions of biologically active molecules, and the design of new drugs using computer-aided drug design.
2.6 Properties of different pharmaceutical dosage forms including novel drug delivery systems.	[A10] Describe the characters and the formulation of different dosage forms, including controlled, targeted and advanced drug delivery systems.
2.7 Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.	[A11] Identify good pharmaceutical manufacturing practice (GPMP) and quality assurance in different pharmaceutical processes (production, packaging, labeling and distribution)
2.8 Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose modification and bioequivalence studies.	[A12] Explain pharmacokinetics models and pharmacokinetic following different routes of administration, bioavailability and bioequivalence.
2.9 Principles of hospital pharmacy including I.V. admixtures, TPN and drug distribution system,	[A13] Outline the principles of hospital pharmacy, including dispensing, hospital formulary, radiopharmaceuticals, total parenteral nutrition, I.V. admixtures, drug monitoring, adverse effects and dose adjustment.
2.10 Principles of public health issues including sources and control of microbial contamination as well as sanitation, disinfection, sterilization methods and	[A14] Specify the basics of public health, the art of preventing disease, promoting health, raising public awareness for the safe use and disposal of medicine. [A15] List the different methods of sterilization, sterility testing and their application in

microbiological QC of pharmaceutical products.	microbiological quality control 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.	<p>[A16] Demonstrate the principles of normal and abnormal bodily functions in healthy and diseased states.</p> <p>[A17] Illustrate genomics and different biochemical pathways regarding their correlation with different diseases.</p> <p>[A18] Describe the structure of the human body and its component organs and cells. Causes, development, and consequences of diseases</p>
2.12 Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	<p>[A19] List the etiology, epidemiology, treatment and control of microbial and parasitic infection and host immune response to such infections.</p> <p>[A20] Specify laboratory diagnosis of different diseases.</p> <p>[A21] Determine pharmacotherapeutic approaches.</p>
2.13 Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, ADRs and drug interactions.	[A22] Illustrate the mechanisms of drug action, and the therapeutic uses, adverse reactions and contraindications.
2.14 Principles of clinical pharmacology, pharmacovigilance and the rational use of drugs.	[A23] Determine the principles of clinical pharmacology, impact of drug interactions on pharmacotherapy for various diseases, and pharmacovigilance.
2.15 Basis of complementary and alternative medicine.	[A24] Categorize the herbal preparations and the nutritional supplements with emphasis on disease prevention and health promotion
2.16 Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.	[A25] Identify the teratogenicity, toxicity and poisoning of common drugs, chemicals, radioactive materials, natural toxins, including: sources, identification, handling, symptoms, management and treatment.

	[A26] Outline the fundamentals of first aid, including basic life support, shock, medical emergency, rescue and transportation.
2.17 Methods of biostatistical analysis and pharmaceutical calculations.	[A27] Demonstrate the basic understanding of pharmaceutical calculations, biostatistical analysis and biological standardization
2.18 Principles of management including financial and human resources.	[A28] Mention the principles of management, capital requirement, financial and human resources, purchasing and financing new pharmacy.
2.19 Principles of drug promotion, sales and marketing, business administration, accounting and pharmacoeconomics.	[A29] Describe drug marketing, advertising, interpersonal communication, promotions, business administration, accounting and pharmacoeconomics.
2.20 Principles of proper documentation and drug filing systems.	[A30] Define the concepts and the principles of clinical pharmacy practice, including maintenance of patient profiles, proper documentation and drug filing.
2.21 Regulatory affairs, pharmacy laws and ethics of health care and pharmacy profession.	[A31] State the laws that govern and affect pharmacy practice, ethical principles and moral rules of pharmacy profession.
2. Professional and Practical Skills	
3.1 Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	[B1] Use effectively the medical and pharmaceutical terminologies, medical abbreviations, idioms, suffixes and prefixes.
3.2 Handle and dispose chemicals and pharmaceutical preparations safely.	[B2] Handle and dispose chemical and pharmaceutical materials safely with application of good laboratory practice (GLP) principles.
3.3 Compound, dispense, label, store and distribute medicines effectively and safely.	[B3] Use the chemical and the pharmaceutical materials properly either in drug manufacture, formulation, design, labeling, storing and distribution of medicinal agents with application of good manufacturing practice (GMP) principles.
3.4 Extract, isolate, synthesize, purify, identify, and /or standardize active substances	[B4] Assess herbal drugs for the determination of drug adulteration, controlling the quality of produced medicinal agents, and discovering new drug entities.

from different origins.	<p>[B5] Apply different methods of analysis of raw materials, inorganic substances and medicinal.</p> <p>[B6] Detect, isolate, purify, and predict the method of synthesis of any chemical entity belonging to certain drug class</p>
3.5 Select medicines based on understanding etiology and path physiology of diseases.	[B7] Select medicine in accordance with understanding of disease etiology and pathophysiology.
3.6 Monitor and control microbial growth and carry out laboratory tests for identification of infectious and non- infections in biological specimens.	[B8] Monitor, safe handling of biological specimens and diagnosis of microbial and parasitic infections microscopically, biochemically and serologically.
3.7 Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens	[B9] Assess toxicity profile , including diagnostic testing and poison detection in biological samples
3.8 Apply techniques used in operating pharmaceutical equipment and instruments.	[B10] Perform standard industrial and/or pharmaceutical instrumentation and laboratory procedures in quality control of pharmaceuticals..
3.9 Maintain public awareness on rational use of drugs and social health hazards of drug abuse and misuse	[B11] Apply the relevant knowledge to health care professionals and patients concerning 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.	[B12] Apply the relevant knowledge to health care, social care professionals and patients for the safe and effective use of medicine.
3.11 Conduct research studies and analyze the results.	[B13] Construct research studies and analyze the results.
3.12 Employ proper documentation and drug filing systems.	[B14] Utilize excellent management of medicines focusing on clinical pharmacy, drug information, uses, adverse reactions, toxicity profiles, maximal and clinical effectiveness and clinical laboratory data.

3. 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.	[C1] Reconstruct the knowledge of pharmaceutical sciences (safe and effective medicine, new drug delivery system), in practice settings.
4.2 Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice.	[C2] Comprehend good laboratory practice (GLP), (GPMP), good storing practice (GSP) and good clinical practice (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.	[C3] Design 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.	[C4] Solve problems concerning incompatibilities during drug dispensing
4.5 Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	[C5] Develop the proper analytical procedures for the standardization of any chemical entity. [C6] 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.	[C7] 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.	[C8] Summarize different molecular genetic techniques to produce and improve biopharmaceutical products from living organisms.
4.8 Select and assess appropriate methods of infection control to prevent	[C9] Select the most appropriate method for infection control.

infections and promote public health.	[C10] Employ the knowledge concerning different microbial and parasitic diseases for promotion of community health.
4.9 Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.	[C11] Integrate the knowledge of physiology, pharmacology, and toxicology in the proper selection and use of drug in various disease conditions.
4.10 Calculate and adjust dosage and dose regimen of medications.	[C12] Calculate dosage and dose regimen of medications as well as interpretation, compounding and dispensing of prescriptions.
4.11 Assess drug interactions, ADRs and pharmacovigilance.	[C13] Justify the knowledge of pharmacology and toxicology in the assessment of drug-drug, drug-food, drug-smoking and drug- environment interaction, and in the proper selection and use of drug in various disease conditions.
4.12 Apply the principles of pharmacoeconomics in promoting cost/effective pharmacotherapy.	[C14] Use principles of pharmacoeconomics and marketing information for promoting cost/ effective pharmacotherapy.
4.13 Analyze and interpret experimental results as well as published literature.	[C15] Analyze and interpret information needed in pharmacy practice supporting the decision making concerning health promotion, disease prevention and encouraging self-care.
4.14 Analyze and evaluate evidence-based information needed in pharmacy practice.	[C16] Use the information needed in pharmacy practice, giving clear advice and critical decisions about patient's state, in co-operation with other health team professionals.
4. General and Transferable Skills	
5.1 Communicate clearly by verbal and means.	[D1] Interact effectively with patients, the public and health care professionals, either by writing or orally.
5.2 Retrieve and evaluate information from different sources to improve professional competencies.	[D2] Perform online computer search to develop information technology skills and knowing how to retrieve information from a variety of sources.
5.3 Work effectively in a team.	[D3] Implement tasks as a member of a team.
5.4 Use numeracy,	[D4] Apply biological statistics in different

calculation and statistical methods as well as information technology tools.	fields of pharmacy, also use math and statistics methods including differentiation, exponential, logarithmic, and trigonometric functions and integration in pharmacy practice. [D5] Practice major applications of software, such as; word, spreadsheets, database, presentations, graphics and internet.
5.5 Practice independent learning needed for continuous professional development.	[D6] Stay up-to-date with the recent pharmaceutical findings and development in pharmacy profession through independent lifelong continuing education.
5.6 Adopt ethical, sales and safety guidelines.	[D7] Adopt ethical, legal and safety guidelines.
5.7 Develop financial, sales and market management skills.	[D8] Develop management skills including financial sales and marketing.
5.8 Demonstrate creativity and time management abilities.	[D9] Manage time as evidenced by the ability to plan and implement efficient mode of working.
5.9 Implement writing and presentation skills.	[D10] Present various information and arguments clearly and correctly either by writing or orally.
5.10 Implement writing and thinking, problem- solving and decision- making abilities.	[D11] Develop critical thinking, problem solving and decision making skills.

2. Program Structure and Contents:

a- Program duration: 5 years in ten semesters each term made up of 15 weeks.

b- Program structure:

✓ **Number of credit hours = 186 CH**

✓ The faculty of pharmacy implements the credit hour system. A credit hour represents an hour of lecture (L) or two hours of practical or tutorial (P/T).

Learning activity	Lectures	Practical	Total
No. of hours/week	130	56	186

In addition to at least 300 hours of field training in which the student should spend and pass. The training is divided into two phases:

Phase 1 (200 hours) in which the student spends in any pharmacy setting including community/hospital pharmacy, pharmaceutical industry or research centers.

Phase 2: consisted of 100 hours of clinical rotations in Zagazig University Teaching Hospital.

✓ **Number of courses = 74**

Courses	Compulsory courses	Elective	Total
Number	71	3	74

The following table illustrates the comparison between the Curriculum Structure of Faculty of Pharmacy, Zagazig University and the structure of a Pharmacy Curriculum allocated by the NARS, 2009.

No. of hours/week	Lecture	Practical	Total	%	NARs%
Basic Sciences	20	9	29	16	10-15
Pharmaceutical Sciences	40	17	57	31	35-40
Medical Sciences	21	9	30	16.5	20-25
Pharmacy Practice	34	17	51	27.4	10-15
Health and Environmental Sciences	6	1	7	3.8	5-10
Behavioral and Social Sciences	4	0	4	2.2	2-4
Pharmacy Management	2	0	2	1.1	2-4
Discretionary	3	3	3	2	up to 8
Total	130	56	186	100%	

c- Study Plan:

item	No. of hours
University requirements	6 CH
Faculty compulsory courses	174 CH
Faculty elective courses	6 CH to be selected from 12 courses (Good manufacturing practice (GMP; Drug design; Advanced pharmaceutical analysis-spectroscopy; Alternative medicinal therapies; Production & manufacture of medicinal plants; Chromatography and separation techniques; Applied industrial pharmacy; Quality assurance and GMP; Cosmetic preparations; Biological standardization; Antimicrobial agents; Veterinary pharmacology
Practical field training	200 hrs of training in any pharmacy setting + 100 hrs of clinical rotations
Program level	5 years / ten terms

d- Curriculum structure:

**Matrix 3: Comparison between curriculum structure of NARS
and Bachelor of Pharmacy-clinical pharmacy Program**

Course Category	Course	Lecture	Practical	Total
Basic Sciences	Physical and inorganic chemistry	2	1	3
	Organic chemistry1	2	1	3
	Organic chemistry2	2	1	3
	Organic chemistry3	2	1	3
	Biophysics	1	1	2
	Analytical chemistry1	2	1	3
	Analytical chemistry2	2	1	3
	Cell biology	1	1	2
	English	2	0	2
	Mathematics	2	0	2
	Botany and medicinal plants	2	1	3
	Total = 29			
Pharmaceutical Sciences	Biopharmaceutics & Pharmacokinetics	2	1	3
	Physical pharmacy	2	1	3
	Pharmacy orientation	1	0	1
	Pharmaceutical dosage forms1	2	1	3

Medica 1 Scienc	Pharmaceutical dosage forms2	2	1	3
	Instrumental analysis	1	1	2
	Radiopharmaceuticals	1	0	1
	Controlled drug delivery systems	2	0	2
	Medicinal chemistry1	2	1	3
	Medicinal chemistry2	2	1	3
	Pharmacognosy1	2	1	3
	Pharmacognosy2	2	1	3
	Phytochemistry1	2	1	3
	Phytochemistry2	2	1	3
	Quality control of herbal drugs	2	1	3
	General microbiology & immunology	3	1	4
	Pharmaceutical microbiology	2	1	3
	Pharmaceutical analysis & Quality control	2	1	3
	Pharmaceutical technology	2	1	3
	Pharmaceutical biotechnology	2	1	3
	Total = 57			
Anatomy	1	0	1	
Physiology	2	1	3	

	Pathophysiology	2	0	2
	Histology	1	1	2
	Medical terminology	2	0	2
	Pathology	2	1	3
	Parasitology	1	1	2
	Biochemistry 1	2	1	3
	Biochemistry 2	2	1	3
	Pharmacology 1	2	1	3
	Pharmacology 2	2	1	3
	Pharmacology 3	2	1	3
Total = 30				
Pharmacy Practice	Clinical Biochemistry	2	1	3
	Clinical nutrition	1	1	2
	Hospital Pharmacy	2	1	3
	Community Pharmacy	2	1	3
	Practice			
	Clinical pharmacokinetics	2	1	3
	Phytotherapy	2	1	3
	Therapeutics-1	2	1	3
	Therapeutics-2	2	1	3
	Drug information	1	0	1
	Drug interactions	2	0	2
	Clinical microbiology	2	1	3
	Oncology	2	1	3
	Gastroenterology	2	1	3
	Pharmacy legislation	1	0	1

	Clinical pharmacy-1	2	1	3
	Clinical pharmacy-2	2	1	3
	Management of dermatological and reproductive diseases	1	1	2
	Management of Pediatrics diseases	2	1	3
	Management of cardiovascular diseases	2	1	3
	Management of respiratory diseases	2	1	3
Total = 51				
Health and Environmental Sciences	First aid	2	0	2
	Toxicology and forensic chemistry	2	1	3
	Public health and preventive medicine	2	0	2
Total = 7				
Behavioral and Social Sciences	Human Rights & fighting corruption	2	0	2
	Psychology	1	0	1
	Sociology	1	0	1
Total = 4				
Pharmacy Management	Drug marketing	1	0	1
	pharmacy administration	1	0	1

Total = 2				
Discretionary	Elective course 1	1	1	2
	Elective course 2	1	1	2
	Elective course 3	1	1	2
Total = 6				

e-Summer Training:

- Every student should complete 300 hours of training divided into 2 phases.

Phase 1: consisted of 200 contact hours in which each student will conduct training in one of the following pharmacy settings: community or hospital pharmacies, pharmaceutical Firms or research institutes. The student should learn how to communicate with patients and healthcare team. The student also should know how to manage, dispense and properly store different dosage forms. Finally, the student should know the regulations of dispensing OTC medications as well as rules and laws controlling the pharmacy profession.

Phase 2: consisted of 100 contact hours in which the student will acquire practical clinical skills through exposure to different clinical rotations of different specialties.

f. Program Learning Outcome Mapping With Courses Matrix

Semester 1:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PC 101	Physical & Inorganic Chemistry	15	2	1	3	A1, A5, A6, B2, B5, C3, D3, D7, D8, D10
PC 102	Pharmaceutical Organic chemistry -1	15	2	1	3	A1, A8, B2, B6, C6, D3, D4, D7, D8, D10
MD 101	Biophysics	15	1	1	2	A18, A20, A16, C11, D2, D3, D10, D11
PG 101	Botany and medicinal plants	15	2	1	3	A2, A8, B5, B4, C3, C6, D3, D8, D7, D10, D11
MD 102	Cell Biology	15	1	1	2	A1, A18, B1, D10, D11
MS 101	Mathematics and statistics	15	2	--	2	A1, D4, D5, D11
EN 101	English language	15	2	--	2	A1, B1, D1, D10
Total			12	5	17	

Semester 2:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PC 203	Pharmaceutical Organic chemistry-2	15	2	1	3	A1, A8, B2, B6, C3, C6, D3, D6, D7, D8, D10, D11
PC 205	Pharmaceutical Analytical chemistry- 1	15	2	1	3	A1, B2, B3, C6, D3, D7, D8
PG 202	Pharmacognosy-1	15	2	1	3	A2, A8, B2, B4, C2, C6, D3, D8, D11, D10
MD 203	Histology	15	1	1	2	A3, A18, B1, D10, D11
PT 201	Physical pharmacy	15	2	1	3	A3, B3, C4, D4
PT 202	Pharmacy orientation	15	1	--	1	A2, D2, D3, D4
HU201	Human rights & fighting corruption	15	2	--	2	A4, A31, C16, D2, D8, D11
Total			12	5	17	

Semester 3:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PC 304	Pharmaceutical Organic Chemistry-3	15	2	1	3	A1, A8, B2, B6, C6, D3, D4, D7, D8, D10
PC 306	Pharmaceutical Analytical Chemistry-2	15	2	1	3	A2, A7, B2, B5, C3, C5, D2, D7, D10
PG 303	Pharmacognosy -2	15	2	1	3	A2, B2, B5, C3, D3, D5, D9, D10
MD 304	Anatomy	15	1	-	1	A3, A18, B1, D10, D11
MD 305	Physiology	15	2	1	3	A3, A18, A26, B1, D2, D11
MD 311	Medical Terminology	15	2	--	2	A3, A16, A18, B1, D2, D7, D10
HU 302	Psychology	15	1	--	1	A4, D3, D11
Total			12	4	16	

Semester 4:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PB 401	Biochemistry-1	15	2	1	3	A3, A16, A17, A20, B2, B6, B8, C3, C6, C15, C16, D2, D3, D5, D9, D10, D11
PG 404	Phytochemistry-1	15	2	1	3	A2, A5, A8, A22, B2, B13, C15, D3, D10, D11
PC 407	Instrumental Analysis	15	1	1	2	A1, A7, A11, B2, C3, C5, D3, D7, D8, D10
PM 401	General Microbiology and Immunology	15	3	1	4	A2, A3, A15, A16, A17, A20, B1, B2, B8, C15, C16, D1, D2, D3, D7, D10
MD 406	Parasitology	15	1	1	2	A3, A16, A19, A20, B1, B7, B8, B12, C10, C15, C16, D1, D2, D10, D11
PT 403	Pharmaceutical dosage forms-1	15	2	1	3	A2, A5, A6, B2, B3, C1, D2, D3, D4, D11
PT 404	Pharmacy legislation	15	1	--	1	A31, D3, D7, D4, D11
Total			12	6	18	

Semester 5:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PO 501	Pharmacology- 1	15	2	1	3	A3, A22, B13, C11, D3, D10
PM 502	Pharmaceutical microbiology	15	2	1	3	A2, A3, A22, B2, B8, C9, C10, C15, C16, D1, D2, D7, D10, D11
PT 505	Pharmaceutical dosage forms-2	15	2	1	3	A2, A5, A6, A10, B2, B3, C1, D3, D11
PB 502	Biochemistry-2	15	2	1	3	A3, A16, A17, B8, C3, C15, D3, D10
PG 505	Phytochemistry-2	15	2	1	3	A2, A8, A24, B2, B6, C5, C6, D3, D11
MD507	Pathophysiology	15	2	--	2	A3, A16, A18, A19, A20, A21, B1, B7, B13, C11, C16, D1, D2, D3, D6, D10, D11
PT 506	Pharmacy Administration	15	1	--	1	A4, A28, A29, C14, D9
Total			13	5	18	

Semester 6:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PO 602	Pharmacology-2	15	2	1	3	A2, A8, A22, B2, B13, C3, D3, D10
PT 607	Pharmaceutical technology	15	2	1	3	A11, B3, C3, D11
PP 601	Community pharmacy practice	15	2	1	3	A13, A20, A22, B1, B12, C4, C12, D1, D11
PC 608	Pharmaceutical analysis & quality control	15	2	1	3	A2, A12, A19, A20, A27, B3, C12, D4, D11
PG 606	Quality Control of Herbal Drugs	15	2	1	3	A2, A8, A11, A24, B2, B4, B10, C2, C6, D3, D8, D9, D10
MD 608	Pathology	15	2	1	3	A3, A16, A19, A20, B1, B8, C10, C15, C16, D1, D2, D10, D11
MD 609	First Aid	15	2	--	2	A26, C16, D2, D10
Total			14	6	20	

Semester 7:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PO 703	Pharmacology-III	15	2	1	3	A3, A22, B15, C11, C13, D3, D11, D10
PP 701	Radio-pharmaceuticals	15	1	--	1	A2, A6, A11, C1, D3, D6
PP 702	Clinical pharmacy-1	15	2	1	3	A2, A13, A30, B14, C2, D3
PP 703	Hospital pharmacy	15	2	1	3	A2, A13, B1, B11, B14, B15, B19, B20, C12, C16, D1, D2, D3, D6, D7
PT 710	Controlled drug delivery systems	15	2	--	2	A10, C1, D6
PC 709	Medicinal chemistry-1	15	2	1	3	A9, B10, C7, D2
PM 703	Pharmaceutical biotechnology	15	2	1	3	A6, A8, C8, D7
PM 704	Clinical microbiology	15	2	1	3	A3, A15, B8, C10, D11
Total			15	6	21	

Semester 8:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PP 805	Management of oncological diseases	15	2	1	3	A19, A20, A21, A22, B15, B19, B20, C3, C11, C13, D3, D10, D11
PP 804	Clinical pharmacy-2	15	2	1	3	A13, A30, B14, B16, C2, D3
PT 809	Biopharmaceutics & pharmacokinetics	15	2	1	3	A2, A12, B1, D7, D10, D11
PC 810	Medicinal chemistry-2	15	2	1	3	A2, A9, B8, C3, C5, C6, D1, D11
PB 803	Clinical biochemistry	15	2	1	3	A3, A20, B16, C2, D2, D3, D4
PP 806	Drug marketing	15	1	--	1	A4, A29, C14, D1, D3, D9
MD 810	Public health & preventative medicine	15	2	--	2	A14, D1, D11
PE	Elective course	15	1	1	2	
Total			14	6	20	

Semester 9:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PO 904	Toxicology and forensic chemistry	15	2	1	3	A25, B2, B9, B11, B18, C1, C11, C13, D1, D2, D3, D10, D11
PO 905	Therapeutics- 1	15	2	1	3	A3, A13, A21, A22, A23, B1, B7, B17, C11, D1, D3, D6, D7, D10, D11
PP 907	Clinical pharmacokinetics	15	2	1	3	A2, A12, B1, B12, B13, B15, B17, C1, C11, C12, D1, D2, D3, D6, D10, D11
PG 907	Phytotherapy	15	2	1	3	A2, A24, A25, B1, B7, B8, B12, B13, C15, C16, D1, D2, D3, D6, D10, D11
PP 904	Clinical nutrition	15	1	1	2	A3, B13, C15, D1, D2, D3, D6, D10, D11
PO 906	Drug interactions	15	2	--	2	A3, A23, B7, B11, B12, B13, C11, C13, D1, D2, D3, D6, D10, D11
HU 903	Sociology	15	1	--	1	A4, C16, D1, D3, D7, D10
PE	Elective course	15	1	1	2	
Total			13	6	19	

Semester 10:

COURSE CODE	COURSE TITLE	NO. OF UNITS	CREDIT HOURS/ WEEK			PROGRAM ILO'S COVERED
			Lec	Lab	Total	
PO 007	Therapeutics-2	15	2	1	3	A3, A21, A22, B1, B7, B15, B17, C11, D1, D3, D6, D7, D10, D11
PP008	Treatment of dermatological and reproductive tissue	15	1	1	2	A16, A18, A19, A21, B1, B7, B12, B13, B15, B17, C1, C11, C15, C16, D1, D2, D3, D6, D10, D11
PP009	Treatment of pediatrics diseases	15	2	1	3	A16, A18, A19, A21, B1, B7, B12, B13, B15, B17, C1, C11, C15, C16, D1, D2, D3, D6, D10, D11
PP010	Treatment of cardiovascular diseases	15	2	1	3	A16, A18, A19, A21, B1, B7, B12, B13, B15, B17, C1, C11, C15, C16, D1, D2, D3, D6, D10, D11
PP011	Gastroenterology	15	2	1	3	A16, A18, A19, A21, B1, B7, B12, B13, B15, B17, C1, C11, C15, C16, D1, D2, D3, D6, D10, D11
PP012	Treatment of respiratory system diseases	15	2	1	3	A16, A18, A19, A21, B1, B7, B12, B13, B15, B17, C1, C11, C15, C16, D1, D2, D3, D6, D10, D11
PP013	Drug information	15	1	--	1	A4, B11, B12, B13, C14, C15, C16, C17, D1, D2, D3, D6, D10, D11
PE	Elective course	15	1	1	2	
Total			13	7	20	

Elective courses:

Code No.	Course title	PROGRAM ILO'S COVERED
PC E11	Drug design	A2, A9, C7, D2, D4, D6, D11
PC E12	Advanced pharmaceutical analysis spectroscopy	A2, B5, C5, D1, D2, D4, D11
PG E8	Alternative medicinal therapies	A2, A24, C1, D1, D3, D7
PG E9	Production & manufacture of medicinal plants	A12, B2, B5, C6, D6, D7
PG E10	Chromatography and separation techniques	A2, A8, D10, D8, D11
PT E10	Quality assurances and GMP	A2, A7, A8, A11, B2, B5, B10, D4, D8
PT E11	Applied industrial pharmacy	A2, B3, B10, D1, D4
PT E12	Good manufacturing practices	A1, A11, A18, B1, B2, B3, B16, C3, D3, D6, D7
PT E13	Cosmetic preparations	A10, C4, D1, D4
PM E5	Biological standardization	A2, A6, A8, D7, D8, D11
PM E6	Antimicrobial agents	A3, B8, D1, D7, D8, D11
PO E9	Veterinary pharmacology	A3, A22, D4, D11

	Total contact hours	PROGRAM ILO'S COVERED
Summer training	300 hr	A5, A6, A8, A37, A38, B1, B2, B3, C15, D1, D2, D3, D7, D11

3. Program admission requirements:

Candidate should have the general certificate of secondary education (scientific section) or an equivalent certificate from a foreign institute recognized by the university

4. Admission policy:

The faculty complies with the admission regulations and requirements of the Egyptian Supreme Council of Universities (ESCU).

5. Admission of Graduate from other facilities:

Graduates from the faculties of medicine, veterinary medicine, dentistry, nursing, science and agriculture are admitted on space- available basis.

Courses complete at another faculty are evaluated for equivalency to the faculty of pharmacy courses. A course waiver remains in effect for five years from the date the course waiver form was signed.

6. Assessment:

- Students' performance is assessed by both course work and examination at the end of each course.
- Methods of assessment include written, oral, and practical examination, research papers, course assignments, presentations and reports.
- 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 grade 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 weighted average of the grade points acquired in the courses passed in that particular semester.
- ❖ Registration symbols that do not carry grade points or credit:
 - S:** represents achievement that is satisfactory
 - U:** represents achievement that is unsatisfactory
 - T:** Transfer, indicates credit transferred from another institution.

W: withdrawal prior to deadline indicates a student has officially withdrawn from a course.

7- Failure in courses:

- ❖ Student who fails to attend the final exam.
- ❖ Student who fails to achieve 30% of the marks in the final written exam.
- ❖ Student who fails to achieve 60% of the total marks.

8- Regulation for progression and program completion:

- Livery student is required to attend 75% of lectures and laboratory periods continuously.
- Selection of courses for any given years is conditional on the successful completion of the prerequisite courses 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.

9- Academic difficulty:

- ❖ A student who fails to maintain a minimum cumulative GPA of "1" for six consecutive semesters or four a total of ten semesters will be dismissed from the faculty.
- ❖ Students are allowed to repeat courses 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 calculations.

10- Graduation:

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

1. The requisite number of credit hours (195 credit hours) with a cumulative GPA equivalent to 1 or above
2. At least 200 hrs (100 credit hr) of training in pharmacy setting.
3. At least 200 hrs (100 credit hr) of training in teaching hospital.

11-Evaluation of program intended learning outcomes:

Evaluator	Tool
1-Senior students	<ul style="list-style-type: none">• Questionnaires• Meetings with bachelor students
2-Alumni	<ul style="list-style-type: none">• Questionnaires• Meetings with graduates
3-Stakeholders	<ul style="list-style-type: none">• Questionnaires for staff members• Questionnaires for Labor market organizations members & Heads and managers of the business sector• Meetings with Labor market organizations members
4-Internal Evaluator	Reviewing Prof. Abd allah ElShanawani Prof. Asem ElShazli
5-External Evaluators	Reviewing Prof. Mahmoud Bakr Al-Ashmawi, Department of Pharmaceutical Chemistry, Mansoura University
6-Others	Curriculum committee
7- Statistics	Students grades Rate of program completion/ graduation Rate of pass/failure
Sample size of questioners = 20% of population	