

# Program Specification B. Pharmacy

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**Sinai University**  
**Faculty of Pharmacy**

**Program Specification**  
**Bachelor of Pharmacy**  
**(B. Pharmacy)**

تم الاعتماد بمجلس الكلية رقم ١٤٢ بتاريخ ٢٠٢٣/٨/٣٠



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**University : Sinai University**

**Faculty : Faculty of Pharmacy**

## **Program Specification**

### **(A) Basic Information:**

#### **1) Program Title :**

Degree of Bachelor of Pharmacy

#### **2) Program Type :**

Single ☒ Double ☐ Multiple ☐

#### **3) Department (s) :**

1. Department of Pharmaceutical Chemistry
2. Department of Pharmaceutics
3. Department of Pharmacology and Toxicology
4. Department of Pharmacognosy
5. Department of Microbiology and Immunology
6. Department of Pharmacy Practice
7. Department of Biochemistry

**Program Coordinator : Prof. Hesham Ali Salem**

**Internal Reviewer : Dr. Abo El-Hagag Abd El-Gawad**

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**Date of Program Approval : Faculty council No 142 (30/8/2023)**

## **(B) Professional Information:**

### **1. Program Aim:**

This program aim to provide the undergraduate students with knowledge, skills and abilities needed to practice the pharmacy profession effectively including pharmaceutical industries, quality assurance, community pharmacies, cosmetic industry, forensic medicine, governmental health institutions, community pharmacies, research centers, and academic institutions. So, the students have basic practical training to make them eligible for licensure as pharmacists.

### **Graduates Attributes:**

Faculty of Pharmacy - Sinai University program is designed to ensure that the graduate will gain fundamental knowledge, clear understanding and required skills to:

- a. Provide information and educate patients and the community about use of medicines and medical devices.
- b. To respect the ethical code of pharmacy profession.
- c. Acquire the proper qualifications in dispensing, storage, and distribution of different pharmaceutical products.
- d. Apply quality control methods to assure standardized procedures in formatting safe and effective pharmaceutical products.
- e. Acquire principles of clinical pharmacy to council patients about the rational use of drugs.
- f. Plan, design and conduct research using different methodologies.
- g. Promote good understanding of the pharmacy profession and the role of pharmacists in multidisciplinary teams.
- h. Demonstrate skills in communication, time management, critical thinking, problem - solving, decision - making and team working
- i. Implement the sense of self learning for continuous improvement of professional knowledge and skills.

## 2. Program learning outcomes:

On successful completion of the program, graduates will acquire the following key competencies in the following domains:

### DOMAIN 1 - FUNDAMENTAL KNOWLEDGE

#### 1-1- COMPETENCY

**Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.**

#### KEY ELEMENTS

**1.C1.1.** Recognize in-depth knowledge of basic science, pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.

**1.C1.2.** Communicate efficiently and effectively with the health care team using appropriate pharmaceutical and medical terms, abbreviations, and symbols..

**1. C1.3.** Utilize information from basic science to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical raw materials and finished products.

**1.C1.4.** Integrate knowledge from fundamental pharmaceutical and medical sciences to explain the drug mechanism of action and assess the efficacy and safety in patient and community.

**1.C1.5.** Retrieve basic scientific drug information from different resources to solve problems related to human health and health systems.

**1.C1.6.** Articulate and interpret information from different scientific literature to improve professional decision-making skills.

**1.C1.7.** Gather and critically analyze new information, including evidence-based information, that may be applicable to the pharmaceutical industry and patient care.

### DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE

#### 2-1- COMPETENCY

**Work collaboratively as a member of an inter-professional health care team to improve the quality of life of individuals and communities, and respect patients' rights.**

#### **KEY ELEMENTS**

- 2. C1.1** Carry out your responsibilities as a pharmacist in a professional manner that is consistent with the profession's ethical norms.
- 2. C1.2.** Maintain the necessary interprofessional partnerships to provide high-quality pharmacy care to individual patients.
- 2.C1.3.** Recognize self-professional limitations and accept criticism and guidance from other health care colleagues, and acceptance of the condition of referral to other members of healthcare team.
- 2. C1.4.** Treat others with sensitivity, empathy, respect and dignity
- 2. C1.5.** Maintain patient confidentiality and respect patients' rights.
- 2. C1.6.** Recognize patient variances based on age and health literacy.
- 2. C1.7.** Determine which therapies will best fulfil the patient's therapeutic needs in collaboration with patients and other health care experts.
- 2. C1.8.** Recognize when a patient's problem is beyond the area of pharmacy practice and send them to other health care providers as needed.

#### **2-2- COMPETENCY**

**Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.**

#### **KEY ELEMENTS**

- 2.C2.1.** Recognize the Design, synthesis, purification, isolation, analysis, and standardization of synthetic and natural pharmaceutical materials and products.
- 2.C2.2.** Employ international guidelines of GMP, QC and QA in pharmaceutical manufacturing, analyzing, drug distribution and storage taking in consideration incompatibility problems.
- 2.C2.3.** Show the ability to use tools, instruments and different software to properly select approaches for synthesis and analysis and production of raw materials and finished pharmaceutical products.

**2.C2.4.** Demonstrate the ability to perform pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and biopharmaceutics concepts and their applications in innovative drug delivery systems, dose adjustment bioequivalence research, and pharmacy practice.

### **2-3- COMPETENCY**

Handle and dispose biologicals and synthetic/natural pharmaceutical materials/products effectively and safely with respect to relevant laws and legislations.

#### **KEY ELEMENTS**

**2.C3.1.** Handle and dispose of chemicals, solvents, biological specimens, natural wastes, biotechnology products, radiopharmaceuticals, and other hazardous items in a safe and environmentally responsible manner.

**2.C3.2.** Use GLP guidelines to ensure that pharmaceutical materials and products are handled and disposed of safely.

### **2-4- COMPETENCY**

Actively share professional decisions and proper actions to save patient's life in emergency situations including poisoning with various xenobiotics, and effectively work in forensic fields.

#### **KEY ELEMENTS**

**2.C4.1.** Guarantee the safe and effective use of medicines and poisons to avoid any harm to public.

**2.C4.2.** Demonstrate knowledge and understanding of the first-aid procedures necessary to save the patient's life.

**2.C4.3.** Identify and manage any drug-related and pharmaceutical.

**2.C4.4.** Evaluate toxicity profiles of chemicals and other xenobiotics and investigate poisons in biological samples.

### **2-5- COMPETENCY**

Contribute in pharmaceutical research studies and clinical trials needed to authorize medicinal products.

#### **KEY ELEMENTS**



**2.C5.1.** Demonstrate an understanding and accomplish of the requirements of the regulatory framework to authorize a medicinal product including the quality, safety, and efficacy requirements.

**2.C5.2.** Collect, interpret, and assess, necessary evidence-based, information related to pharmaceutical industries and patient's health care needs.

**2.C5.3.** Participate in a research team to plan and carryout research studies using suitable methodologies.

### **2-6- COMPETENCY**

**Perform pharmacoeconomic analysis and develop promotion, sales, marketing, and business administration skills.**

#### **KEY ELEMENTS**

**2. C6.1.** Implement business administration and management principles to ensure the efficient utilization of financial and human resources.

**2. C6.2.** Recognize fundamentals of drug promotion, sales, marketing, accounting, and outcomes of pharmacoeconomic analysis.

## **DOMAIN 3: PHARMACEUTICAL CARE**

### **3-1- COMPETENCY**

**Apply the principles of body functions to participate in improving health careservices using evidence-based data.**

#### **KEY ELEMENTS**

**3.C1.1.** Apply the foundations of human physiology and genetics to control various disorders and diseases to improve health care services.

**3. C1.2.** Suggest appropriate infection control techniques using public health and pharmaceutical microbiology principles.

**3. C1.3.** Record and regulate microbial growth and conduct laboratory tests to identify of infections /diseases.

**3. C1.4.** Select the appropriate medication therapy for a given disease based on its etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases.

### 3-2- COMPETENCY

**Provide counseling and education services to patients and communities about safe and rational use of medicines and medical devices.**

#### KEY ELEMENTS

- 3. C2.1.** Apply drug information data to advice and educate patients about mechanisms of action, therapeutic uses, dosage, contraindications, and adverse drug interaction and drug interactions.
- 3. C2.2.** Rationalize the use of medicines and medical devices by relating the principles of clinical pharmacology, clinical nutrition and Pharmacovigilance
- 3. C2.3.** Integrate best available evidence for application of non-conventional therapy into pharmacy practice such as phytotherapy, aromatherapy and nutraceuticals.
- 3. C2.4.** Educate patients and community about toxic profiles of drugs and other toxic substances, including signs, symptoms and sources and how to use those for risk management.
- 3. C2.5.** Increase public awareness about the safe use of over the counter (OTC) and prescription pharmaceuticals, both natural and synthetic, as well as medical devices.
- 3. C2.6.** Establish public awareness on rational use of drugs, drug abuse and misuse.

### DOMAIN 4: PERSONAL PRACTICE

#### 4-1- COMPETENCY

**Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.**

#### KEY ELEMENTS

**4. C1.1.** Recognize the structure of a multi-professional team to evaluate team performance as well as team members and apply effective time management skills.

**4. C1.2.** Collect information and analyze data, identify problems and present solutions, participate independently and collaboratively with other team members.

**4. C1.3** Use the knowledge and basis of entrepreneurship to creatively plan and conduct projects that simulate entrepreneurial environment.

#### **4-2- COMPETENCY**

**Effectively communicate verbally, non-verbally and in writing with individuals and communities.**

#### **KEY ELEMENTS**

**4. C2.1.** Demonstrate oral and written communications skills with patients, other health care professionals and communities.

**4. C2.2.** Use new information technologies to develop presentation skills.

#### **4-3- COMPETENCY**

**Express self-awareness and be a life-long learner for continuous professional improvement.**

#### **KEY ELEMENTS**

**4.C3.1.** Perform self-assessment to identify learning and development needs to enhance professional and personal competencies.

**4.C3.2.** Promote continuous learning to develop professional skills.

### 3. Academic Standards of Program Specification:

The faculty adopts the Academic Standards of the National Authority for Quality Assurance and Accreditation of Education (NAQAAE), Competency-Based NARS 2017, in a faculty council no. (117) on 17 / 11 / 2020 .

**Matrix1: Comparisons of Graduates Attributes with the National Academic Reference Standard, 2017**

Attributes of the graduates (NARS, 2017)	Program Graduates Attributes
1. Educate and counsel individuals and communities to participate in optimizing Therapeutic outcomes and minimizing the incidence of illness of individuals and populations.	a. Provide information and educate patients and the community about use of medicines and medical devices
2. Practice and perform responsibilities and authorities legally, professionally, and ethically respecting patients' rights.	b. Able to respect the ethical code of pharmacy profession.
3. Utilize evidence-based data to deliver contemporary pharmaceutical products and pharmacy services.	c. Acquire the proper qualifications in dispensing, storage and distribution of different pharmaceutical products.
4. Assure the quality of pharmaceutical materials and products.	d. Apply quality control methods to assure standardized procedures in formatting safe and effective pharmaceutical product.
5. Apply integrated evidence-based pharmaceutical and clinical information in assessing the appropriateness, effectiveness, and safety of medications.	e. Acquire principles of clinical pharmacy to council patients about the rational use of drugs.
6. Contribute effectively in planning and conducting research using appropriate methodologies.	f. Plan, design and conduct research using different methodologies.
7. Work collaboratively and share Therapeutic decision-making as a member of an interprofessional health care team.	g. Promote good understanding of the pharmacy profession and the role of pharmacist in multidisciplinary teams
8. Demonstrate effective communication, leadership, business administration, and entrepreneurial skills.	h. Demonstrate skills in communication, time management, critical thinking, problem – solving, decision – making and team working

Attributes of the graduates (NARS, 2017)	Program Graduates Attributes
9. Work as a life-long learner for continuous professional improvement and demonstrate capabilities of performance appraisal and self-assessment.	i. Implement the sense of self learning for continuous improvement of professional knowledge and skills.

**Matrix 2: Comparison between the Program key elements and the National Academic Reference Standards, NARS 2017 key elements**

DOMAIN 1- FUNDAMENTAL KNOWLEDGE	
<b>1-1- COMPETENCY</b> <b>Integrate knowledge from basic and applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products, and deliver population and patient-centered care.</b>	
Key elements, NARS 2017	Program key elements
<b>1-1-1-</b> Demonstrate understanding of knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.	<b>1.C1.1.</b> Recognize in-depth knowledge of basic science, pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences.
<b>1-1-2-</b> Utilize the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	<b>1.C1.2.</b> Communicate efficiently and effectively with the health care team using appropriate pharmaceutical and medical terms, abbreviations, and symbols.
<b>1-1-3-</b> Integrate knowledge from fundamental sciences to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical materials/products.	<b>1.C1.3.</b> Utilize information from basic science to handle, identify, extract, design, prepare, analyze, and assure quality of synthetic/natural pharmaceutical raw materials and finished products.
<b>1-1-4-</b> Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate their appropriateness, effectiveness, and safety in individuals and populations.	<b>1.C1.4.</b> Integrate knowledge from fundamental pharmaceutical and medical sciences to explain the drug mechanism of action and assess the efficacy and safety in patient and community.
<b>1-1-5-</b> Retrieve information from fundamental sciences to solve therapeutic problems.	<b>1.C1.5</b> Retrieve basic scientific drug information from different resources to solve problems related to human health and health systems.
<b>1-1-6-</b> Utilize scientific literature and collect and interpret information to enhance professional decision.	<b>1.C1.6.</b> Articulate and interpret information from different scientific literature to improve professional decision-making skills.
<b>1-1-7-</b> Identify and critically analyze newly emerging issues influencing pharmaceutical industry and patient health care.	<b>1.C1.7.</b> Gather and critically analyze new information, including evidence-based information, that may be applicable to the pharmaceutical industry and patient care.

## DOMAIN 2: PROFESSIONAL AND ETHICAL PRACTICE

### 2-1- COMPETENCY

**Work collaboratively as a member of an inter-professional health care team to improve the quality of life of individuals and communities, and respect patients' rights.**

#### Key elements, NARS 2017

#### Program key elements

**2-1-1** Perform responsibilities and authorities in compliance with the legal and professional structure and role of all members of the health care professional team.

**2.C1.1.** Apply professional and legal requirements, including legislation, policies, and internal regulations while practicing the profession with the healthcare team.

**2-1-2** Adopt ethics of health care and pharmacy profession respecting patients' rights and valuing people diversity.

**2.C1.2.** Apply the principles of professional codes of ethics, preserving patients' rights and respecting population diversity.

**2-1-3** Recognize own personal and professional limitations and accept the conditions of referral to or guidance from other members of the health care team.

**2.C1.3.** Recognize self-professional limitations and accept criticism and guidance from other health care colleagues.

### 2-2- COMPETENCY

**Standardize pharmaceutical materials, formulate and manufacture pharmaceutical products, and participate in systems for dispensing, storage, and distribution of medicines.**

**2-2-1** Isolate, design, identify, synthesize, purify, analyze, and standardize synthetic/natural pharmaceutical materials.

**2.C2.1.** Design, identification, synthesis, purification, isolation, analysis, and standardization of synthetic and natural pharmaceutical materials.

**2-2-2** Apply the basic requirements of quality management system in developing, manufacturing, analyzing, storing, and distributing pharmaceutical materials/ products considering various incompatibilities.

**2.C2.2.** Employ international guidelines of GMP, QC and QA in pharmaceutical manufacturing, analyzing, drug distribution and storage taking in consideration incompatibility problems.



<b>2-2-3</b> Recognize the principles of various tools and instruments, and select the proper techniques for synthesis and analysis of different materials and production of pharmaceuticals.	<b>2. C2.3.</b> Show the ability to use tools, instruments and different software to properly select approaches for synthesis and analysis of raw materials and finished pharmaceutical products.
<b>2-2-4</b> Adopt the principles of pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and bio-pharmaceutics and their applications in new drug delivery systems, dose modification, bioequivalence studies, and pharmacy practice.	<b>2.C2.4.</b> Demonstrate the ability to perform pharmaceutical calculations, biostatistical analysis, bioinformatics, pharmacokinetics, and biopharmaceutics concepts and their applications in innovative drug delivery systems, dose adjustment bioequivalence research, and pharmacy practice.
<b>2-3- COMPETENCY</b> <b>Handle and dispose biologicals and synthetic/natural pharmaceutical materials/products effectively and safely with respect to relevant laws and legislations.</b>	
<b>2-3-1</b> Handle, identify, and dispose biologicals, synthetic/natural materials, biotechnology-based and radio-labeled products, and other materials/products used in pharmaceutical field.	<b>2. C3.1.</b> Handle and dispose of chemicals, solvents, biological specimens, natural wastes, biotechnology products, radiopharmaceuticals, and other hazardous items in a safe and environmentally responsible manner.
<b>2-3-2</b> Recognize and adopt ethical, legal, and safety guidelines for handling and disposal of biologicals, and pharmaceutical materials/products.	<b>2. C3.2.</b> Use GLP guidelines to ensure that pharmaceutical materials and products are handled and disposed of safely.
<b>2-4- COMPETENCY</b> <b>Actively share professional decisions and proper actions to save patient's life in emergency situations including poisoning with various xenobiotics, and effectively work in forensic fields.</b>	
<b>2-4-1</b> Ensure safe handling/use of poisons to avoid their harm to individuals and communities.	<b>2.C4.1.</b> Identify the safe and effective use of medicines and poisons to avoid any harm to public.
<b>2-4-2</b> Demonstrate understanding of the first aid measures needed to save patient's life.	<b>2.C4.2.</b> Demonstrate knowledge and understanding of the first-aid procedures necessary to save the patient's life.

<b>2-4-3</b> Take actions to solve any identified medicine-related and pharmaceutical care problems.	<b>2.C4.3.</b> Identify and manage any drug-related and pharmaceutical care problems.
<b>2-4-4</b> Assess toxicity profiles of different xenobiotics and detect poisons in biological specimens.	<b>2.C4.4.</b> Evaluate toxicity profiles of chemicals and other xenobiotics and investigate poisons in biological samples.
<b>2-5- COMPETENCY</b> <b>Contribute in pharmaceutical research studies and clinical trials needed to authorize medicinal products.</b>	
<b>2-5-1</b> Fulfill the requirements of the regulatory framework to authorize a medicinal product including quality, safety, and efficacy requirements.	<b>2. C5.1.</b> Demonstrate an understanding of the requirements of the regulatory framework to authorize a medicinal product including the quality, safety, and efficacy requirements.
<b>2-5-2</b> Retrieve, interpret, and critically evaluate evidence-based information needed in pharmacy profession.	<b>2. C5.2</b> Collect, interpret, and assess relevant, necessary evidence-based information about a patient's health-related care needs.
<b>2-5-3</b> Contribute in planning and conducting research studies using appropriate methodologies.	<b>2. C5.3.</b> Participate in a research team to plan and carryout research studies using suitable methodologies.
<b>2-6- COMPETENCY</b> <b>Perform pharmacoeconomic analysis and develop promotion, sales, marketing, and business administration skills.</b>	
<b>2-6-1</b> Apply the principles of business administration and management to ensure rational use of financial and human resources.	<b>2. C6.1.</b> Implement business administration and management principles to ensure the efficient utilization of financial and human resources.
<b>2-6-2</b> Utilize the principles of drug promotion, sales, marketing, accounting, and pharmacoeconomic analysis.	<b>2.C6.2.</b> Recognize fundamentals of drug promotion, sales, marketing, accounting, and outcomes of pharmacoeconomic analysis.
<b>DOMAIN 3: PHARMACEUTICAL CARE</b>	
<b>3-1- COMPETENCY</b> <b>Apply the principles of body functions to participate in improving health care services using evidence-based data.</b>	
<b>Key elements, NARS 2017</b>	<b>Program key elements</b>
<b>3-1-1</b> Apply the principles of body function and basis of genomics in	<b>3. C1.1.</b> Apply the foundations of human physiology and genetics to control various

health and disease states to manage different diseases.	disorders and diseases to improve health care services.
<b>3-1-2</b> Apply the principles of public health and pharmaceutical microbiology to select and assess proper methods of infection control.	<b>3. C1.2.</b> Suggest appropriate infection control techniques using public health and pharmaceutical microbiology principles.
<b>3-1-3</b> Monitor and control microbial growth and carry out laboratory tests for identification of infections/diseases.	<b>3. C1.3.</b> Record and regulate microbial growth and conduct laboratory tests to identify of infections /diseases.
<b>3-1-4</b> Relate etiology, epidemiology, pathophysiology laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutic approaches.	<b>3.C1.4.</b> Select the appropriate medication therapy for a given disease based on its etiology, epidemiology, pathophysiology, laboratory diagnosis, and clinical features of infections/diseases.
<b>3-2- COMPETENCY</b> <b>Provide counseling and education services to patients and communities about safe and rational use of medicines and medical devices.</b>	
<b>3-2-1</b> Integrate the pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, adverse drug reactions and drug interactions.	<b>3. C2.1.</b> Apply drug information data to advice and educate patients about mechanisms of action, therapeutic uses, dosage, contraindications, and adverse drug interaction and drug interactions.
<b>3-2-2</b> Apply the principles of clinical pharmacolog and pharmacovigilance to ensure safe use of medications and medical devices.	<b>3.C2.2.</b> Rationalize the use of medicines and medical devices by relating the principles of clinical pharmacology, clinical nutrition and Pharmacovigilance
<b>3-2-3</b> Provide evidence-based patient-centered recommendations for safe use of complementary medicine including phytotherapy, aromatherapy, and nutraceuticals.	<b>3. C2.3.</b> Integrate best available evidence for application of non-conventional therapy into pharmacy practice such as phytotherapy, aromatherapy and nutraceuticals.
<b>3-2-4</b> Provide information about toxic profiles of drugs and other xenobiotics including sources, identification, symptoms, and management control.	<b>3. C2.4.</b> Educate patients and community about toxic profiles of drugs and other toxic substances, including signs, symptoms and sources and how to use those for risk management.

<b>3-2-5</b> Educate and counsel patients, other health care professionals, and communities about the safe and proper use of medicines, including over-the-counter medications and medical devices.	<b>3. C2.5.</b> Increase public awareness about the safe use of over the counter (OTC) and prescription pharmaceuticals, both natural and synthetic, as well as medical devices.
<b>3-2-6</b> Maintain public awareness on social health hazards of drug misuse and abuse.	<b>3. C2.6.</b> Establish public awareness on rational use of drugs, drug abuse and misuse.
<b>DOMAIN 4: PERSONAL PRACTICE</b>	
<b>4-1- COMPETENCY</b> <b>Express leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills.</b>	
<b>Key elements, NARS 2017</b>	<b>Program key elements</b>
<b>4-1-1</b> Demonstrate responsibility for team performance and peer evaluation of other team members, and express time management skills.	<b>4. .C1.1</b> Recognize the structure of a multi-professional team to evaluate team performance as well as team members and apply effective time management skills.
<b>4-1-2</b> Retrieve and critically analyze information, identify and solve problems, and work autonomously and effectively in a team.	<b>4. C1.2</b> Collect information and analyze data, identify problems and present solutions, participate independently and collaboratively with other team members.
<b>4-1-3</b> Demonstrate creativity and apply entrepreneurial skills within a simulated entrepreneurial activity.	<b>4. C1.3</b> Use the knowledge and basis of entrepreneurship to creatively plan and conduct projects that simulate entrepreneurial environment.
<b>4-2- COMPETENCY</b> <b>Effectively communicate verbally, non-verbally and in writing with individuals and communities.</b>	
<b>4-2-1</b> Demonstrate effective communication skills verbally, non-verbally, and in writing with professional health care team, patients, and communities.	<b>4.C2.1</b> Demonstrate oral and written communications skills with patients, other health care professionals and communities.
<b>4-2-2</b> Use contemporary technologies and media to demonstrate effective presentation skills.	<b>4. C2.2</b> Use new information technologies to develop presentation skills.

**4-3- COMPETENCY**

**Express self-awareness and be a life-long learner for continuous professional improvement.**

**4-3-1** Perform self-assessment to enhance professional and personal competencies.

**4.C3.1** Perform self-assessment to identify learning and development needs to enhance professional and personal competencies.

**4-3-2** Practice independent learning needed for continuous professional development.

**4.C3.2** Promote continuous learning to develop professional skills

## 4. Program Structure and contents:

### 4.1. Program duration:

The bachelor's degree programme in pharmacy is a 5 year full-time extended undergraduate degree. It combines the study of up-to-date courses that cover a wide spectrum that blends the pharmaceutical sciences with professional practice. The programme is structured into two semesters each year, each semester made up of 15 weeks. An optional 7-week summer semester intensive programme is also offered.

The Faculty of Pharmacy implements the credit hour system. A credit hour represents an hour of lectures (L) or two hours of practical or tutorial (P/T) classes a week for a period of 15 weeks.

### 4.2. Program structure:

- **No. of credit hours:**

The bachelor's degree of Pharmacy is granted to students who successfully complete a minimum of 173 credit hours divided as follows:

I- University requirements :	10	credit hours
II- Faculty requirements :	157	credit hours
III- Elective courses :	6	credit hours

- **Field training**

Students should complete at least 300 hours of training, under supervision of a faculty member, in pharmacy settings such as community or hospital pharmacies or in pharmaceutical industries approved by the faculty council. Students commence training after the end of the third year.

### 4.3. Program Levels (in credit-hours system):

**Semester (1) / First year** : Required to pass (18) units distributed as follows:

Compulsory: (13) Cr. Hs      Elective: 0      University Requirement: 5

**Semester (2) / First year** : Required to pass (17) units distributed as follows:

Compulsory: (15) Cr. Hs      Elective: 0      University Requirement: 2

**Semester (3) / Second year** : Required to pass (17) units distributed as follows:

Compulsory: (15) Cr. Hs      Elective: 0      University Requirement: 2  
**Semester (4) / Second year** : Required to pass (17) units distributed as follows:  
Compulsory: (17) Cr. Hs      Elective: 0      University Requirement: 0  
**Semester (5) / Third year** : Required to pass (18) units distributed as follows:  
Compulsory: (17) Cr. Hs      Elective: 0      University Requirement: 1  
**Semester (6) / Third year** : Required to pass (17) units distributed as follows:  
Compulsory: (17) Cr. Hs      Elective: 0      University Requirement: 0  
**Semester (7) / Fourth year** : Required to pass (18) units distributed as follows:  
Compulsory: (18) Cr. Hs      Elective: 0      University Requirement: 0  
**Semester (8) / Fourth year** : Required to pass (17) units distributed as follows:  
Compulsory: (15) Cr. Hs      Elective: 2      University Requirement: 0  
**Semester (9) / Fifth year** : Required to pass (17) units distributed as follows:  
Compulsory: (15) Cr. Hs      Elective: 2      University Requirement: 0  
**Semester (10) / Fifth year** : Required to pass (17) units distributed as follows:  
Compulsory: (15) Cr. Hs      Elective: 2      University Requirement: 0

#### 4.4.- Program Courses:

The student must successfully study 173 credit hours, including 157 credit hours compulsory courses, 6 credit hours elective courses, and 10 credit hours university requirements. The student must complete summer training under the supervision of the faculty.

## Level 1

### Semester (1)

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHC 1101	General & Physical Chemistry	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 2.C2.2, 2.C2.3, 2.C3.1, 2.C3.2, 4.C1.1, 4.C1.2
PHC 1102	Organic Chemistry (1)	2	1	3	1.C1.1, 1.C1.3, 2.C2.1, 2.C2.4, 4.C1.1
PHG 1101	Botany & Medicinal Plants	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 4.C1.1, 4.C1.2
PHT 1101	Pharmacy Orientation & Basic Pharmaceutics	2	-	2	1.C1.1, 4.C2.1
MTH 1101	Mathematics & Statistics	2	-	2	1.C1.1, 4.C1.2
ITC E01	Introduction to Computer Science	2	1	3	1.C1.1, 4.C1.2, 4.C2.2
SSE E44	English Language (1)	2	-	2	4.C1.1, 4.C1.2, 4.C2.1 , 4.C2.2
Total		14	4	18	



## Semester (2)

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHC 1203	Organic Chemistry (2)	2	1	3	1.C1.1, 1.C1.3, 2.C2.1, 2.C2.3, 4.C1.2, 4.C2.2
PHC 1205	Analytical Chemistry	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 2.C2.2, 2.C2.3, 2.C3.1, 2.C3.2, 4.C1.1, 4.C1.2
PHT 1202	Physical Pharmacy	2	1	3	1.C1.1, 2.C3.1, 4.C1.1, 4.C1.2, 4.C1.3, 4.C2.1
PHG 1202	Pharmacognosy (1)	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 2.C2.3, 2.C3.1, 3.C2.1, 3.C2.5, 3.C2.6, 4.C1.1, 4.C1.2
PHO 1201	Anatomy & Histology	2	1	3	1.C1.1, 4.C2.1, 4.C2.2, 4.C3.1
SSE E45	English Language (2)	2	-	2	4.C1.1, 4.C1.2, 4.C2.1, 4.C2.2
Total		12	5	17	

## Level 2

### Semester (3)

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHC 2105	Organic Chemistry (3)	2	1	3	1.C1.1, 1.C1.3, 2.C2.1, 2.C2.3, 4.C1.2, 4.C2.2
PHC 2106	Pharmaceutical Analytical Chemistry	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 2.C2.1, 2.C2.2, 2.C2.3, 2.C2.4, 2.C5.1, 4.C1.1, 4.C2.1, 4.C2.2, 4.C3.1
PHG 2103	Pharmacognosy (2)	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 2.C2.3, 2.C3.1, 3.C2.1, 3.C2.5, 3.C2.6, 4.C1.1, 4.C1.2
PHT 2103	Pharmaceutics (1)	2	1	3	1.C1.1, 2.C2.1, 2.C3.1, 4.C1.1, 4.C2.1, 4.C3.1
PHO 2102	Physiology	2	1	3	1.C1.1, 1.C1.2, 3.C1.1, 4.C1.1, 4.C2.1, 4.C2.2.
SSG E03	Scientific Thinking	1	-	1	4.C1.1, 4.C1.2, 4.C2.1, 4.C2.2, 4.C3.1, 4.C3.2
SSG E01	Human Rights	1	-	1	1.C1.1, 2.C4.1, 2.C6.1, 3.C2.1, 4.C1.1
Total		12	5	17	

### Semester (4)

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHT 2204	Pharmaceutics (2)	2	1	3	1.C1.1, 2.C2.1, 2.C3.1, 4.C1.1, 4.C1.2, 4.C1.3, 4.C2.1
PHM 2201	Microbiology	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5, 2.C3.1, 2.C3.2, 2.C4.1, 3.C1.1, 3.C1.2, 4.C1.1, 4.C2.1
PHM 2202	Parasitology	2	1	3	1.C1.1, 1.C1.6, 1.C1.7, 2.C1.1, 2.C1.2, 2.C1.3, 3.C1.1, 3.C1.2, 3.C1.3, 3.C1.4, 4.C2.1, 4.C2.2, 4.C3.1, 4.C3.2
PHM 2203	Pathology	2	1	3	1.C1.1, 1.C1.3, 1.C1.4, 3.C1.1, 3.C1.2, 4.C2.1, 4.C2.2
PHO 3103	Pathophysiology	2	-	2	1.C1.1, 1.C1.3, 3.C1.1, 4.C1.1, 4.C2.2.
PHG 2204	Phytochemistry	2	1	3	1.C1.1, 1.C1.3, 2.C2.1, 2.C2.3, 4.C1.2, 4.C1.3, 4.C2.1, 4.C2.2
Total		12	5	17	

**Level 3**
**Semester (5)**

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHB 3101	Biochemistry (1)	2	1	3	1.C1.1, 1.C1.2, 2.C2.3, 2.C3.1, 3.C1.1, 4.C1.1, 4.C1.2, 4.C1.2, 4.C1.3, 4.C2.1
PHM 3104	Pharmaceutical Microbiology	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 2.C3.1, 2.C3.2, 2.C4.1, 3.C1.1, 3.C1.2, 3.C2.1, 4.C2.1, 4.C3.1
PHP 2201	Pharmacy Administration	2	-	2	1.C1.4, 1.C1.5, 1.C1.6, 2.C5.1, 4.C1.1, 4.C1.2, 4.C1.3, 4.C2.1, 4.C2.2
PHO 3104	Pharmacology (1)	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 2.C3.1, 2.C4.1, 3.C2.1, 3.C2.2, 3.C2.5.
PHT 3105	Pharmaceutics (3)	2	1	3	1.C1.1, 2.C2.1, 2.C3.1, 4.C1.1, 4.C1.2, 4.C1.3, 4.C2.1
SSG E07	Psychology & Communication Skill	1	-	1	1.C1.1, 1.C1.2, 1.C1.5, 2.C1.3, 3.C1.1, 3.C1.4, 4.C1.1, 4.C1.2, 4.C1.3, 4.C2.1, 4.C2.2, 4.C3.1, , 4.C3.2
PHG 3105	Production & Manufacture of Medicinal Plants	2	-	2	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 4.C1.1, 4.C1.2
SSG E02	Sinai History	1	-	1	1.C1.1, 2.C4.1, 2.C6.1, 3.C2.1, 4.C1.1
Total		14	4	18	

### Semester (6)

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHB 3202	Biochemistry (2)	2	1	3	1.C1.1, 1.C1.2, 3.C1.3, 4.C1.1, 4.C2.2.
PHC 3207	Pharmaceutical Chemistry (1)	2	1	3	1.C1.1, 1.C1.3, 1.C1.4, 2.C2.1, 2.C2.3, 2.C3.1, 2.C3.2, 4.C1.1
PHO 3205	Pharmacology (2)	2	1	3	1.C1.1, 1.C1.4, 2.C1.1, 3.C1.3, 2.C3.1, 2.C5.3, 3.C1.4, 3.C2.1, 4.C1.1, 4.C1.3, 4.C1.2 4.C2.1.
PHT 3206	Pharmaceutics (4)	2	1	3	1.C1.1, 2.C2.1, 2.C3.1, 4.C1.1, 4.C1.2, 4.C1.3, 4.C2.1
PHG 3206	Chromatography and Separation Techniques	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 2.C1.1, 2.C2.1, 2.C2.3, 4.C1.1
PHP 3202	Pharmaceutical Marketing	2	-	2	1.C1.4, 1.C1.5, 1.C1.6, 2.C5.1, 4.C1.1, 4.C1.2, 4.C1.3, 4.C2.1, 4.C2.2
Total		12	5	17	

## Level 4

### Semester (7)

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHB 4103	Clinical Biochemistry	2	1	3	1.C1.1, 1.C1.2, 1.C1.4, 3.C1.1, 3.C1.4, 4.C1.2, 4.C1.3 4.C2.1
PHO 4106	Pharmacology (3)	2	1	3	1.C1.1, 1.C1.2, 1.C1.4, 2.C4.1, 2.C4.2, 3.C2.1, 3.C2.2, 4.C1.1, 4.C1.2
PHC 4108	Pharmaceutical Chemistry (2)	2	1	3	1.C1.1, 1.C1.3, 1.C1.4, 2.C2.1, 2.C2.3, 2.C2.4, 2.C3.1, 2.C3.2, 4.C1.1, 4.C1.2.
PHT 4107	Design of Dosage Forms & Quality Assurance	2	1	3	1.C1.1, 1.C1.3, 2.C2.1, 4.C1.3, 4.C2.1
PHT 4108	Biopharmaceutics & Pharmacokinetics	2	1	3	1.C1.1, 1.C1.4, 2.C2.4, 2.C4.1, 2.C4.3, 4.C1.1
PHP 4103	Therapeutics (1)	2	1	3	1.C1.5, 1.C1.6, 1.C1.7, 2.C4.2, 3.C1.4, 3.C2.1, 4.C1.1, 4.C1.2, 4.C2.1, 4.C3.1, 4.C3.2
Total		12	6	18	

### Semester (8)

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHP 4204	Therapeutics (2)	2	1	3	1.C1.5, 1.C1.6, 1.C1.7, 2.C1.2, 2.C1.3, 2.C4.2, 3.C1.4, 3.C2.1, 4.C1.1, 4.C1.2, 4.C2.1, 4.C3.1, 4.C3.2
PHO 4207	Toxicology & Forensic Chemistry	2	1	3	1.C1.1, 1.C1.2, 1.C1.4, 2.C3.1, 2.C3.2, 2.C4.1, 2.C4.2, 3.C2.1, 3.C2.4.
PHM 4205	Medical Microbiology and Immunology	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5, 1.C1.6, 1.C1.7, 2.C1.1, 3.C1.1, 3.C1.2, 3.C1.3, 4.C1.1, 4.C2.1, 4.C2.2
PHT 4209	Hospital Pharmacy	2	-	2	1.C1.1, 2.C1.1, 2.C1.3, 2.C2.2, 3.C2.1, 4.C1.1
PHB 4204	Nutrition	1	-	1	1.C1.1, 1.C1.2, 4.C1.1, 4.C1.2, 4.C2.2.
PHC 4209	Instrumental Analysis	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 2.C2.2, 4.C1.1, 4.C1.2.
	Elective	2	-	2	
Total		13	4	17	

**Level 5**
**Semester (9)**

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHP 5105	Clinical Pharmacy (1)	2	1	3	1.C1.1, 1.C1.2, 1.C1.4, 1.C1.5, 2.C1.1, 2.C1.2, 3.C1.1, 3.C2.1, 3.C2.2, 4.C1.2, 4.C1.3, 4.C3.1, 4.C3.2
PHO 5108	Biological Screening and Bioassay	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 2.C2.2, 2.C2.3, 3.C1.1, 3.C1.2, 3.C1.3, 4.C1.1, 4.C1.2, 4.C1.3
PHC 5110	Pharmaceutical Quality Control	2	1	3	1.C1.1, 1.C1.2, 1.C1.3, 1.C1.5, 2.C2.1, 2.C2.2, 2.C2.4, 4.C2.1, 4.C2.2, 4.C3.1, 4.C3.2
PHC 5111	Drug Design	2	-	2	1.C1.1, 1.C1.3, 1.C1.4, 1.C1.5, 2.C2.1, 2.C2.3, 2.C2.4, 4.C1.1, 4.C1.2, 4.C1.3
PHT 5110	Industrial Pharmacy (1)	2	1	3	1.C1.1, 1.C1.7, 2.C2.3, 4.C1.1, 4.C1.2, 4.C1.3, 4.C2.1, 4.C3.1
PHM 5106	Introduction to Biotechnology	1	-	1	1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5, 1.C1.6, 1.C1.7, 4.C1.1, 4.C2.1, 4.C2.2
	Elective	2	-	2	
Total		13	4	17	



### Semester (10)

Course Code	Course Title	Credit Hours			Program Key Elements Covered
		L	P/T	Total	
PHP 5206	Clinical Pharmacy (2)	2	1	3	1.C1.1, 1.C1.2, 1.C1.4, 1.C1.5, 2.C1.1, 2.C1.2, 2.C1.3, 3.C1.1, 3.C2.1, 3.C2.2, 4.C1.1, 4.C1.2, 4.C3.1, 4.C3.2
PHT 5211	Industrial Pharmacy (2)	2	1	3	1.C1.1, 1.C1.3, 2.C2.2, 4.C1.1, 4.C1.2, 4.C1.3, 4.C3.1
PHP 5207	Drug Information	2	-	2	1.C1.1, 1.C1.4, 2.C1.3, 2.C4.1, 3.C2.1, 3.C2.4., 4.C2.1, 4.C2.2
PHM 5207	Public Health	2	-	2	1.C1.1, 1.C1.2, 1.C1.3, 1.C1.4, 1.C1.5, 1.C1.6, 1.C1.7, 2.C1.1, 2.C4.4, 3.C1.2, 3.C1.4, 3.C2.6, 4.C1.1, 4.C2.1, 4.C2.2
PHO 5209	First Aid	1	-	1	1.C1.1, 1.C1.2, 2.C4.1, 2.C4.2, 2.C4.3, 3.C2.5
PHP 5208	Community Pharmacy	2	1	3	1.C1.1, 1.C1.2, 2.C1.1, 2.C1.2, 2.C1.3, 2.C4.1, 2.C4.2, 2.C4.3, 3.C2.1, 3.C2.2, 3.C2.4, 4.C3.1, 4.C3.2
PHP 5209	Pharmaceutical Ethics and Legislation	1	-	1	1.C1.1, 1.C1.2, 1.C1.3, 1.C1.5 2.C1.1, 2.C5.1
	Elective	2	-	2	
Total		14	3	17	

### Elective courses:

The Faculty of Pharmacy offers elective courses from which the students are free to select six credit hours.

Course Code	Course Title	Credit Hours			PROGRAM KEY ELEMENTS COVERED
		L	P/T	Total	
PHC E13	Advanced Instrumental Analysis	2	-	2	1.C1.1, 2.C2.1, 2.C2.3, 2.C5.2, 4.C1.1, 4.C2.2, 4.C3.1
PHC E14	Computer Aided Drug Design	2	-	2	1.C1.1, 1.C1.3, 2.C2.1, 2.C2.4, 4.C1.1, 4.C3.2
PHG E09	Natural Products	2	-	2	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 4.C1.1
PHG E10	Alternative Medicinal Therapies	2	-	2	1.C1.1, 1.C1.2, 1.C1.4, 1.C1.5, 2.C1.1, 2.C1.4, 2.C1.3, 3.C.2.1, 3.C.2.3, 3.C.2.5, 4.C.1.1, 4.C.1.2 4.C2.1.
PHG E11	Quality Control of Herbal Drugs	2	-	2	1.C1.1, 1.C1.2, 1.C1.3, 2.C2.1, 2.C2.2, 2.C2.3, 4.C1.1
PHT E13	Radiopharmaceuticals	2	-	2	1.C1.1, 2.C2.4, 4.C2.1
PHT E14	Applied Industrial Pharmacy	2	-	2	1.C1.1, 2.C2.2, 4.C1.1, 4.C1.2
PHT E15	Cosmetic Preparations	2	-	2	1.C1.1, 2.C2.1, 4.C1.3, 4.C2.1
PHT E16	Advanced Pharmaceutics	2	-	2	1.C1.1, 2.C2.4, 4.C1.1
PHM E08	Antimicrobial Agents	2	-	2	1.C1.1, 1.C1.4, 1.C1.5, 1.C1.6, 2.C.1.1, 2.C.4.1, 2.C.4.2, 3.C.1.3, 3.C.2.1, 3.C.2.4, 4.C1.1, 4.C2.1, 4.C2.2
PHM E09	Biological Standardization	2	-	2	1.C1.1, 4.C1.1, 4.C2.1, 4.C2.2
PHM E10	Bioinformatics	2	-	2	1.C1.1, 1.C1.3, 1.C1.5, 1.C1.6, 2.C.2.3, 2.C.5.2, 2.C.5.3, 4.C1.1, 4.C2.1, 4.C2.2
PHO E11	Veterinary Pharmacology	2	-	2	1.C1.1, 2.C1.1, 3.C1.3, 4.C1.1, 4.C2.1.
PHO E12	Clinical Toxicology	2	-	2	1.C1.1, 2.C2.1, 2.C2.2, 3.C1.1, 3.C2.1, 3.C2.2, 4.C1.1.
PHO E13	Drug Abuse	2	-	2	1.C1.1, 2.C2.3, 3.C1.3, 4.C1.3

### Field training:

Training	Total contact hours	Program Key Elements Covered
Summer training	300 hr	1.C1.2 , 1.C1.4 , 1.C1.5 , 2.C1.1 , 2.C1.2 , 2.C1.3 2.C2.1 , 2.C4.1 , 2.C5.2 , 2.C5.3 , 3.C1.4 , 3.C2.1 , 3.C2.3 , 3.C2.4 , 3.C2.5 , 3.C2.6 , 4.C1.1 , 4.C1.2 , 4.C2.1 , 4.C3.1 , 4.C3.2

## 5. Program Courses Contents:

### Courses Offered or Supervised by the Department of Pharmaceutical Chemistry (PHC)

#### Required Courses

#### **PHC 1101 General & Physical Chemistry**

Matter; its properties and measurement, atomic structure, chemical bonding and intermolecular forces. Gases, liquids, and solids. Qualitative analysis of cations and anions. Chemical kinetics (Zero, first, pseudo and second order reactions, activation energy).

#### **PHC 1102 Organic Chemistry (1)**

Nature of organic compounds and structures. Nomenclature, aliphatic (saturated and unsaturated) hydrocarbons. Organic reactions (substitutions, additions, eliminations and condensations). Chemistry of the different organic classes: halogenated hydrocarbons, alcohols, ethers, carbonyl compounds and amino acids.

#### **PHC 1203 Organic Chemistry (2)**

Chemistry of aromatic organic compounds including aromatic hydrocarbons, halogen and nitro derivatives, amines and diazonium salts, phenols, aromatic carboxylic acids, aromatic aldehydes, aromatic ketones, sulfonic acids and polynuclear aromatic hydrocarbons. Introduction to use of spectroscopic methods in organic chemistry (UV, IR, MS, NMR).

#### **PHC 1204 Analytical Chemistry**

Review of fundamentals, titrimetry, acid-base equilibria and titrations, nonaqueous titrations, complexation equilibria and titration, oxidation-reduction and precipitation equilibria and titration and gravimetry.

#### **PHC 2105 Organic Chemistry (3)**

Stereochemistry and Stereoisomerism. Organic reaction mechanisms (substitutions, additions, eliminations and condensations). Heterocyclic compounds including monocyclic monoheteroatom and fused bicyclic compounds.

**PHC 2106 Pharmaceutical Analytical Chemistry.**

Introduction to electrochemical methods of analysis including potentiometry, conductimetry. Introduction to spectroscopic analysis, Refractometry and polarimetry, Spectrophotometry. Water analysis and Lipids.

**PHC 3207 Pharmaceutical Chemistry (1)**

Introduction to pharmaceutical and medicinal chemistry, physicochemical properties of drugs in relation to biological action, chemotherapeutic agents, synthetic antimicrobial agents, malaria chemotherapy, antibacterial antibiotics and cancer chemotherapy.

**PHC 4108 Pharmaceutical Chemistry (2)**

Central nervous system depressants, central nervous system stimulants, cardiovascular agents, analgesic agents, steroids and related compounds.

**PHC 4209 Instrumental Analysis**

This course includes, instrumental methods of analysis, ultraviolet and infrared spectroscopy, NMR, Mass spectroscopy, flame and atomic absorption spectroscopy.

**PHC 5110 Pharmaceutical Quality Control**

Control and quality assurance, in process control and validation, sampling process prior to analysis, analysis of raw materials and finished products using reference standards, drug stability and stability testing, performance and calibration of instruments used in pharmaceutical analysis, validation of analytical methods and ISO and BSI.

**PHC 5111 Drug Design**

Structure activity relationships, quantum mechanical approaches, molecular connectivity, pharmacophore generation, molecular modification by isosteric replacement. Natural products leading to new pharmaceuticals, mathematical treatment serving prediction, defining sites and targets, molecular modeling, prodrugs and drug latentionation.

**Elective Courses****PHC E13 Advanced Instrumental Analysis**

Applications of instrumental methods of analysis (ultraviolet and infrared spectroscopy; NMR; mass spectrometry; atomic absorption spectroscopy, GC-MS, X-ray spectroscopy) to pharmaceutical compounds.

## **PHC E14 Computer Aided Drug Design**

Computer graphic, Molecular modelling, molecular mechanics, molecular dynamics, quantum mechanics, and docking.

### **Courses Offered or Supervised by the Department of Pharmacognosy (PHG)**

#### **Required Courses**

### **PHG 1101 Botany & Medicinal Plants**

Cytology, morphology and anatomy of different plant organs, plant physiology, classification, and systematic botany of some lower and higher plants with examples of medically active plants. A general introduction of medicinal plants (cultivation, collection, drying, packing, storage, and adulteration) and drugs from plant origin are also covered.

### **PHG 1202 Pharmacognosy (1)**

An introduction to Pharmacognosy and a detailed pharmacognostical study of drugs composed of leaves, flowers, barks, galls and woods and unorganized drugs.

### **PHG 2103 Pharmacognosy (2)**

Detailed pharmacognostical study of drugs composed of seeds, fruits, herbs, rhizomes and roots and animal drugs

### **PHG 2204 Phytochemistry**

Devoted to the study of plants therapeutically active principles, volatile oils, carbohydrates, resins and resin combinations, bitter principles, tannins, alkaloids and glycosides, in addition to hallucinating and anticancer drugs.

### **PHG 3105 Productions & Manufacture of Medicinal Plants**

Commercial production of medicinal plants, cultivation, collection, drying, preservation, extraction, quality control, and final packing of entire or powdered forms or extracts.

### **PHG 3206 Chromatography and Separation Techniques**

Introduction and modes of separation, gel filtration and permeation, ion exchange chromatography, type properties, ion exchange and non-ion exchange manifestation and applications. High-pressure liquid chromatography, gas liquid chromatography and their applications.

**Elective Courses****PHG E09 Natural Product**

Separation, isolation and identification of biologically active compounds from plants, animals and microorganisms.

**PHG E10 Alternative Medicinal Therapies**

The study of herbal preparations, nutritional supplements, and homeopathies. The study of herbal preparations that are widely used by the general public as self-selected OTC (over the counter) products/NPDs (nonprescription drugs). Food items for therapeutic, disease prevention, or health promotion purposes. Emphasis will be placed on the role of the pharmacist to help clients make an informed choice and counsel them on the selection of useful and safe products.

**PHG E11 Quality Control of Herbal Drugs**

Quality control of herbal drugs including type of herbal medicine, side effects and toxicity.

**Courses Offered or Supervised by the Department  
of Pharmaceutics (PHT)****Required Courses****PHT 1101 Pharmacy Orientations & Basic Pharmaceutics**

Topic covered: History of pharmacy practice with particular emphasis on Arab impact, pharmacy orientation, roles of the pharmacist, pharmacy organizations, systems of medicine. Introduction to pharmaceutical dosage forms, routes of drug administration, types of prescriptions, and Incompatibilities.

**PHT 1202 Physical Pharmacy**

Rheology, surface and interfacial phenomena, solubility and dissolution rate, types of solutions and their properties.

**PHT 2103 Pharmaceutics (1)**

Includes, pharmaceutical calculation, liquids dosage forms include pharmaceutical solutions, colloids and macromolecular system, suspensions and emulsions.

**PHT 2204 Pharmaceutics (2)**

Formulation, preparation and evaluation of semisolids and related dosage forms, transdermal, topical preparations and suppositories.

**PHT 3105 Pharmaceutics (3)**

Formulation, preparation and evaluation of solid dosage forms, powders, micromeritics granules, tablets, tablet coating, hard capsules, soft capsules and microencapsulation.

**PHT 3206 Pharmaceutics (4)**

Sterile dosage forms; parenteral medications, ophthalmic preparations and radiopharmaceuticals.

**PHT 4107 Design of Dosage Forms and Quality Assurance**

Preformulation studies, rate reactions, drug and drug products stability, pharmaceutical ingredients, quality control and assurance organization, inspection control, documentation, environmental control.

**PHT 4108 Biopharmaceutics & Pharmacokinetics**

Factors affecting drug absorption, factors affecting drug elimination, product development, pharmacokinetics models, pharmacokinetics following I.V. administration, pharmacokinetics following oral dosage forms, kinetics of drug absorption, clearance, bioavailability and bioequivalency, absolute and relative bioavailability, assessment of bioavailability and correlation between in vitro dissolution and in vivo absorption.

**PHT 4209 Hospital Pharmacy**

Organization and structure of a hospital pharmacy, hospital pharmacy department and dispensing, hospital formulary, radiopharmaceuticals and nuclear pharmacy, surgical dressing and sutures, plasma substitute, central sterile supply unit and its management, manufacture of sterile and non-sterile products, I.V. admixtures, pharmacy and therapeutic committee and manufacturing units in hospitals.

**PHT 5110 Industrial Pharmacy (1)**

Heat transfer, materials for plant constructions, packaging materials, evaporation, drying, extraction, crystallization, filtration, centrifugation and distillation.

**PHT 5211 Industrial Pharmacy (2)**

Mixing, emulsification, homogenization, size reduction, size separation, size enlargements, good manufacturing practice, safety measures and validation.



**MTH 1101 Mathematics & Statistics**

Functions and graphs, limits and continuity, differentiation, exponential, logarithmic, and trigonometric functions, integration, basic differential equations, functions of several variables and problems related to them, probability and random variables, hypothesis testing.

**Elective Courses****PHT E13 Radiopharmaceuticals**

Basic principles involving the application of radiation and radioactive compounds in medical diagnosis, therapy and industry. Rationale for utility, preparation and quality control of radiopharmaceuticals. Biologic effects of various radiations.

**PHT E14 Applied Industrial Pharmacy**

Good manufacturing practice regulations and quality assurance with emphasis on process validation and sampling techniques.

**PHT E15 Cosmetic Preparations**

The principles and methods used in the design, preparation and quality criteria for different categories of cosmetic products.

**PHT E16 Advanced Pharmaceutics**

Topic covered includes Drug targeting, novel drug delivery systems, Pharmaceutical biotechnology.

**Courses Offered or Supervised by the Department  
of Microbiology and Immunology (PHM)****Required Courses****PHM 2201 Microbiology**

Eukaryotic and prokaryotic cells, nomenclature of microorganisms, structure and form of the bacterial cells, spores, mycoplasma or PPLO, actinomycetes. Rickettsiae, viruses, eukaryotic microorganisms (fungi), bacterial genetics, molecular genetics, physiology of microorganisms, the growth curve microbial metabolism.

**PHM 2202 Parasitology**

Introduction, protozoology; amoebae; ciliate; flagellates; blood and tissue sporozoa. Medical helminthology; nematodes; cestodes; trematodes, and arthropods

**PHM 2203 Pathology**

The study of the aetiology, principle diagnostic features, and main characteristics of diseases of the cardiovascular system, respiratory tract, central nervous system and other important organ systems of the body.

**PHM 3104 Pharmaceutical Microbiology**

Sterilization, sterilization indicators, sterility testing, microbial contamination of pharmaceutical products, aseptic area, the microbiological quality of pharmaceuticals. Antimicrobial agents: classification, mechanism of action of antimicrobial drugs, drug combination, resistance of microorganisms to antimicrobial agents, assessment of a new antibiotic, microbiological assay of antibiotics, microbiological assay of vitamins, amino acids and growth factor, mode of action of nonantibiotic antimicrobial agents. Chemical disinfectants, antiseptics and preservatives.

**PHM 4205 Medical Microbiology and Immunology**

Topic covered include Bacteriology; gram positive bacteria, the mycobacterium group, gram negative bacteria, chlamydia and rickettsia. Mycology: Ringworm, moniliasis, maduroid mycosis and sporotrichosis. Virology: RNA viruses and DNA viruses. Immunology: Host parasite relationship, Non-specific and specific immunity, Mechanism of protective immunity, Hypersensitivity and in vitro antigen antibody reactions, Autoimmunity and auto-immune disease, Immune deficiency disorders, Transplantation immunology, Cancer immunology, Immunological tolerance.

**PHM 5106 Introduction to Biotechnology**

This course provides the principal knowledge in cell biology, an introduction to molecular biological tools (PCR, Southern, Northern and Western blots, microarrays and DNA sequencing), an overview of biotechnology and its role in industrial applications (genetic engineering, bioremediations and phytoremediation's), a basic ethical conception mechanism within biotechnology and update the students with the rapid development within the area of gene therapy, stem cells and small RNAs.

**PHM 5207 Public Health**

Introduction, epidemiology, communicable and non-communicable diseases, control of communicable diseases, immunization, infections, occupational medicine, environmental health, water-borne and food borne diseases, milk-borne diseases, nutrition and family health, environmental pollution, waste water treatment, waste disposal.

**Elective Courses****PHM E08 Antimicrobial Agents**

Factors affecting choice of antimicrobial agent, types of antimicrobial compounds, types of antibiotics and synthetic antimicrobial agents, clinical uses of antimicrobial drugs, manufacturing of antibiotics and other synthetic antimicrobial agents, principle methods of assaying antibiotics, mechanism of action of antibiotics, bacterial resistance to antibiotics, disinfection policy, evaluation of non-antibiotic antimicrobial agents and mode of action of non-antibiotic antimicrobial agent.

**PHM E09 Biological Standardization**

Assays of hormones, sera, vaccines, toxins, antitoxins, antibiotics and vitamins.

**PHM E10 Bioinformatics**

The course focuses on current bioinformatics tools and databases, and application of bioinformatics in genomics and molecular biology

**Courses Offered or Supervised by the Department of Pharmacology and Toxicology (PHO)****Required Courses****PHO 1201 Anatomy & Histology**

Introduction, skeletal system, muscular system, articular system, fascia, cardiovascular system, lymphatic system, nervous system, digestive system, respiratory system, uro-genital system, endocrine glands, cytology, blood, structure of liver, spleen, lungs, kidney, lymph nodes, cardiac muscle, stomach, intestine and aorta.

**PHO 2102 Physiology**

Introduction (cell, body water, homeostasis, transport of materials), nervous system (autonomic nervous system), neuron structure and function (reflex arc), cardiovascular system, blood, respiratory cycle, gastrointestinal system, reproduction system, renal system, endocrine glands and body temperature regulation.

**PHO 3103 Pathophysiology**

Introduction to pathophysiology, cell injury, inflammation and immune response, autonomic nervous system in health and disease, endocrine disorders, pancreatic disorders, fluid and electrolyte imbalance, neoplasia and cancer, vascular and haematological disorders, disease of urinary, pulmonary and digestive systems.

**PHO 3104 Pharmacology (1)**

The general principles of pharmacology, pharmacokinetics, pharmacodynamics, receptor theory and drug interaction. This is followed by a comprehensive study of drugs acting on the autonomic nervous system, cardiovascular system and renal system.

**PHO 3205 Pharmacology (2)**

Drugs affecting the central nervous system, the gastrointestinal system, the respiratory system, the blood and blood forming elements, autacoids as well as local anaesthetics.

**PHO 4106 Pharmacology (3)**

The course deals with the chemotherapy of microbial diseases, neoplastic diseases and parasitic infestation and the study of hormones and hormone antagonists.

**PHO 4207 Toxicology and Forensic Chemistry**

Introduction to toxicology, general principles of toxicology, disposition of toxicants, poisoning with common drugs, poisoning with common chemicals, chemical and biological warfare agents, radiation and radioactive material toxicity, general management of poisoning, clinical toxicology of specific drug groups, management of envenomation with natural toxins, maternal, foetal and neonatal toxicity.

**PHO 5108 Biological Screening and Bioassay**

Principles of biological assays, screening procedures of drugs, biological evaluation of new drugs, screening of drugs acting on the autonomic nervous system, screening and biological assay of neuromuscular blockers, histamine and antihistaminic drugs, serotonin, analgesics (narcotics and non-narcotics), antidepressants, antipsychotics, cardiac glycosides, local anaesthetics, anticonvulsants, antibilharzial drugs, anti-arrhythmic drugs, anti-inflammatory drugs, drugs acting on gastrointestinal functions and hormones. Biostatistics.

**PHO 5209 First AID**

Basic Life Support, bleeding, shock, medical emergencies, poisoning, bones and joints, soft tissue injuries, rescue and transportation.

**Elective Courses****PHO E11 Veterinary Pharmacology**

The commonly used veterinary biological and pharmaceutical preparations; general sanitary and management procedures for the prevention and control of livestock diseases; a brief review of infectious diseases and animal parasites.

**PHO E12 Clinical Toxicology**

The objective of the course is to relate the basic pharmacological and toxicological principles to the treatment of the poisoned patient. Several of the compounds commonly encountered in the accidental or intentional poisoning are to be covered. The students will be able to recognize signs and symptoms of poisoning, characterize the type and extent of intoxication and develop a specific modern management plan.

**PHO E13 Drug Abuse**

The course focuses on the general basics and concepts of neurochemistry of addiction, the pharmacology of mind-altering drugs, mechanisms underlying the psychoactive effects of both CNS stimulants and depressants, how to manage various drug addicts both pharmacologically and psychologically.

**Courses Offered or Supervised by the Department  
of Biochemistry (PHB)****Required Courses****PHB 3101 Biochemistry (1)**

The course covers subcellular organelles and membranes. Biological and biochemical properties of proteins, nucleic acids, carbohydrates, lipids, and enzymes. Biological oxidations, and related biochemical processes. Basic concepts of replication, transcription and translation

**PHB 3202 Biochemistry (2)**

This course includes metabolism of carbohydrates, lipids, and Nitrogen, regulation of metabolism, integration of metabolism.

**PHB 4103 Clinical Biochemistry**

The course covers the analysis of blood and body fluid tests for the functional state of liver, kidney, heart, bone, gastrointestinal tract, endocrine glands, and interpretation of the results in relation to health and disease.

**PHB 4204 Nutrition**

The course focuses on the kinds and amounts of macronutrients (carbohydrates, fat, and proteins) and micronutrients (vitamins and minerals) that are needed to maintain optimal health and prevent chronic disease in adults.

## Courses Offered or Supervised by the Department of Pharmacy Practice (PHP)

### Required Courses

#### **PHP 2201 Pharmacy Administration**

Capital requirements, purchasing and financing a new pharmacy, location analysis, pharmacy layout design, space management for pharmacy practice, inventory purchasing and control, OTC merchandising, advertising, interpersonal communication, inter-professional relations and patient consultation

#### **PHP 3202 Pharmaceutical Marketing**

Designed to get student acquainted with the most recent techniques for marketing of drugs. Topics covered include: Marketing concepts, business strategies, consumer and organizational market, marketing research, product management, advertising, promotion and personal selling.

#### **PHP 4103 Therapeutics (1)**

Student should learn cardiovascular system, including introduction to cardiovascular system, dyslipidaemia, ischemic heart disease, hypertension, and congestive heart failure. Endocrine system, including diabetes mellitus. Inflammatory disorder including rheumatoid arthritis, osteoarthritis, and gout. Respiratory system disorders including asthma, chronic obstructive pulmonary disease, and cystic fibrosis.

#### **PHP 4204 Therapeutics (2)**

Student should learn gastrointestinal system disease including gastroesophageal reflux disease, peptic ulcer disease, inflammatory bowel disease and pancreatitis. Thyroid gland disorders. Adrenal gland disorders. Haematological system disorders including anaemia and sickle cell anaemia. Dermatological system including psoriasis and common skin disorders. Antimicrobial regimen selection.

#### **PHP 5105 Clinical Pharmacy (1)**

Student should learn introduction to cancer, breast cancer, colorectal cancer, acute lymphocytic leukaemia, acute myeloid leukaemia, Hodgkin's lymphoma, Non-Hodgkin's lymphoma, Neuroblastoma, Medulloblastoma, Bacterial infection, Viral infection and Fungal infection

**PHP 5206 Clinical Pharmacy (2)**

Student should learn Epilepsy, Parkinson disease, Pain management, Alzheimer disease, Schizophrenia , Bipolar disorders, Generalized Anxiety ,Panic disorders, social anxiety disorders , Attention-Deficient hyperactivity disorders and Supportive care.

**PHP 5207 Drug Information**

Drug information and poison information centres, drug-drug interactions, drug-food interactions, drug disease interactions, and intravenous incompatibilities. Use of the Internet for drug and research information.

**PHP 5208 Community Pharmacy**

The student should learn introduction to community pharmacy, management skills in the pharmacy, Multidisciplinary pharmaceutical work ,Symptoms management ,Responding Symptoms in community pharmacy ,External OTC lecture.

**PHP 5209 Pharmaceutical Ethics and Legislation**

A detailed presentation of law that governs and affects the practice of pharmacy, legal principles for non-controlled and controlled prescriptions, over-the-counter drug requirements, opening new pharmacies, opening medical stores, opening factories, opening scientific offices, medicine registration, pharmacies and medicine stores management. Pharmacist duties and responsibilities, pharmacist-patient relationship, patient's rights and ethical principles and moral rules.

**SSG E07 Psychology & Communication Skills**

The objective of this course is to help understand the behaviour of the people around us. Topics include: Contemporary psychology: Psychological processes, sensation, perception, conditioned learning, motivation. Secondary psychological processes: learning, memory, language and cognition, intelligence, personality, developmental psychology, environmental and child psychology.

Behaviour dynamics: Groups, the individual, environmental, group problems, differentiation, density, handicaps, aggression, the media.

Mental Health: signs of good mental health and disturbances (neuroses and psychoses), conflicts and frustration as precursors to the neuroses, genetic predisposition and diseases as precursors to the psychoses, some of the main therapies in psychology.



## University Requirements

### **SSE E44 English Language (1)**

Training in reading, comprehension, basic grammatical rules, writing and translation. The course adopts a systematic approach to proper essay writing, such as idea development, paragraph structure, introductions, support, and conclusions.

### **SSE E45 English Language (2)**

Oral presentation and creative report writing skill on relevant subjects, namely, term papers and library research work. Students should learn how to express themselves concisely and to the point. Train the students to understand medical and pharmaceutical terminologies, medical abbreviations, medical idioms, suffixes and prefixes.

### **SSG E03 Scientific Thinking**

The course trains students to think logically and critically and helps them to adapt and integrate in an academic environment. The student is familiarised with methods of researching and accessing information through the library or the Internet and is trained to assess the content and sources of information, reporting and citing scientific literature, and how to maintain high ethical standards.

### **ITC E01 Introduction to Computer Science**

Introduction to computer technology. Computer hardware, software and operating systems. Using various input/output devices and operating systems, data organization. Practice on major application software packages such as word processing, spreadsheets, database, and presentation graphics. How to use the Internet (searching and finding topics) and accessing e-mail.



## 6. Program Admission Requirements:

### 6.1. Admission Policy

Sinai University complies with the admission regulations and requirements of the Egyptian Supreme Council of Universities (ESCU) and Private Universities Council of the Ministry of Higher Education. However, new applicants may have to pass an admission test. According to the result of the admission test, a maximum of three non-credit courses may be required by SU before getting enrolled in study.

### 6.2. Transfer Admission Rules

- The faculty from which the student is to be transferred should be accredited by Egyptian Supreme Council of Universities (ESCU).
- Transfer students from other Egyptian or foreign universities must fulfill all Sinai University Faculty of Pharmacy admission requirements.
- Courses completed at another faculty are evaluated for equivalency to SU Faculty of Pharmacy courses before being exempted.
- The transferred student must study at least 60% of the syllabus of the B. Pharm degree in SU.

### 6.3. Admission of Post-baccalaureate Students

- Graduates from the Faculties of Medicine, Veterinary Medicine, Dentistry, Nursing, Science and Agriculture are admitted on a space-available basis.
- Courses completed at another faculty are evaluated for equivalency to the SU Faculty of Pharmacy courses before being exempted.
- Students must study at least 60% of the syllabus of the B. Pharm degree in Sinai University.

### 6.4. Course Registration:

At the beginning of each semester, students select the courses from the list of the offered courses. Academic advisers are available to offer advice and guidance during the registration of courses. Selection of courses for any given year is conditional on the successful completion of the prerequisite courses of the preceding academic year. Students are allowed to add or drop a course or more during a specified time every semester.

### 6.5. Course load:

- The Course load is the number of registered credit hours per student each semester.
- The academic load in each semester ranges from 12 to 20 credit hours.
- The academic load in the summer semester is not more than 9 credit hours.
- Credits acquired by the student are those of passed courses from the registered academic load.

### 6.6. Attendance:

Students are expected to attend the university on a full-time basis during each semester. Attendance is checked during lectures, seminars, tutorials and labs. Students must attend at least 75% of the lectures, tutorials and practical labs. If absence in a course exceeds the allowed percentage (25%) during the first ten weeks of the semester (either excused or unexcused), the student will not be allowed to sit for the exam of the relevant subject and will carry grade of "F".

## 7. Regulations for Program Course Completion:

Students are awarded the Bachelor of Pharmacy degree upon completion of:

- 1) The requisite number of credit hours (173 credit hours) with a cumulative GPA equivalent to 2 or above.
- 2) Students should complete at least 300 hours of training, under supervision of a faculty member, in pharmacy settings such as community or hospital pharmacies or in pharmaceutical industries approved by the faculty council. Students commence training after the end of the third year.

## 8. Methods and rules of Student's Assessment:

### 8.1. Assessment methods:

The assessment measures the outcome of students' learning in terms of knowledge acquired, understanding developed, and skills gained.

Student's performance is assessed by:

- Written examination which may contain short-answer questions, essay-type questions and/or calculations.

- Assessed coursework, including problem solving, essay writing, multiple choice tests, essays and or/laboratory report writing, research project reports, poster, or oral presentation.

## 8.2. Marks Distribution

- The total grade is out of 100%.
- To pass a course, the student must obtain a minimum of 60% of the total grade and a minimum of 30% of the final written exam.
- The grades of the faculty courses are distributed according to the following table:

Type of course	C.W.	Pract.	Wr.	Total
Course includes a practical	35	25	40	100
Course has no practical	50	--	50	100

## 8.3. Grading Scheme:

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

Grade	Definition	Percentage	Grade points
<b>A+</b>	Excellent	≥ 95%	4.0
<b>A</b>		90 – < 95%	4.0
<b>A-</b>		85 - < 90%	3.7
<b>B+</b>	Very good	80 - < 85%	3.3
<b>B</b>		75 - < 80%	3.0
<b>C+</b>	Good	70 - < 75%	2.7
<b>C</b>		65 - < 70%	2.4
<b>D</b>	Satisfactory	60 - < 65%	2.0
<b>F</b>	Fail	< 60%	0
<b>W</b>	-	Withdraw	
<b>I</b>	-	Incomplete	
<b>Absent</b>	-	Absent	

#### 8.4. Registration symbols that do not carry grade points or credit:

- **I** : Incomplete: a temporary grade that indicates the requirement of a course has not been completed. The instructor assigns “I” when, due to extraordinary circumstances, the student was prevented from completing the requirements of a course.
- **S** : Represents achievement that is satisfactory.
- **U** : Represents achievement that is unsatisfactory
- **T** : Transfer, indicates credits transferred from another institution.
- **W**: Withdrawal prior to deadline indicates a student has officially withdrawn from a course.

#### 8.5. 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 record.
- The semester GPA of the student is the weighted average of the grade points acquired in the courses passed in that particular semester.

$$\text{Semester GPA (GPA)} = \frac{\sum \text{Points of all courses in one semester}}{\sum \text{Cr.Hrs in one semester}}$$

$$\text{Cumulative GPA (cGPA)} = \frac{\sum \text{Points of all courses in all semester}}{\sum \text{Cr.Hrs in all semester}}$$

#### 8.6. Failure in courses:

- Students who fail to attend the final exam.
- Students who fail to achieve 30 % of the marks in the final written exam.
- Students who fail to achieve 60 % of the total marks.
- Students who fail a required course are allowed to repeat this course.
- Students who fail an elective course are allowed to repeat this course or to take another elective course.

## 9. Evaluation of Program Learning Outcomes and Competencies:

Evaluator	Tool	Sample	% Contribution in Total Marks of Program Evaluation
5 <sup>th</sup> Year Students	Questionnaires and Periodic Meetings	Questionnaires (20%)	25%
Alumni	Questionnaires and Periodic Meetings	Questionnaires (20%)	25%
Stakeholders (Employers)	Questionnaires and Periodic Meetings	One meeting / year	25%
External Evaluator	Reviewing of the specifications of the program and the courses according to the bylaw	At least one reviewer professor in the specialty	25%

**Program Coordinator**

**Prof. Hesham Ali Salem**

**Dean of Faculty of Pharmacy**

**Sinai University**



**Head of Quality Assurance Unit**

**Dr. Abo El-Hagag Abd El-Gawad**

**Faculty of Pharmacy**

**Sinai University**




**Faculty Dean**

**Prof. Hesham Ali Salem**

**Dean of Faculty of Pharmacy**

**Sinai University**

