



College of Pharmacy
Department of Pharmacy.

Study Plan of the Bachelor's Degree
In: Pharmacy
Academic Year: 2024/2025

Study Plan Credit hours(160)

Major Type:

Type of Program: **Blended/ Online**

Humanities

Scientific/Technical

Science Medical

Teaching Type	Percentage of study plan hours/number	Actual Ratio
Complete Online E-Learning	20% - 10% Maximum	17% (27/160)
Blended learning (for scientific majors)	50% - 30% Maximum	43% (69/160)
Face-to-face learning (for scientific majors)	30% Minimum	40% (64/160)

Note: The learning types of the courses are disseminated at all academic levels in the program



Department Vision

Entrepreneurship and distinction in pharmaceutical sciences, academically and professionally, at the local, regional, and international levels.

Department Mission

Preparing pharmaceutical cadres supported by the knowledge, skills, and ethics of the profession, to meet the needs of the local, regional and global community, by local and international quality criteria.

Program Mission

Providing distinguished academic programs supported by the knowledge, skills, and ethics of the profession through qualified cadres capable of keeping pace with the local and approved e-learning criteria.

Educational Program Objectives

1. Providing advanced and distinguished education to graduate professionally and research-qualified pharmacists.
2. Preparing students with the skills of pharmacists work in line with the practical or market and the needs of society.
3. Encouraging scientific research, the appropriate atmosphere for conducting it, and developing it.
4. Serving public and private civil society institutions, especially those working in the pharmaceutical field.

Educational Program Outcomes

1. Develop, integrate, and apply knowledge from the foundational sciences (i.e., pharmaceutical, social/behavioral/administrative, health, and clinical sciences) to evaluate the scientific literature, explain drug action, solve therapeutic problems, and advance population health and patient-centered care.
2. Provide patient-centered care as the medication expert (collect and interpret evidence, prioritize, formulate assessments and recommendations, foster patient support and empowerment, implement, monitor and adjust plans, and document activities).
3. Manage patient healthcare needs using human, financial, technological, and physical resources to optimize the safety and efficacy of medication use systems.



4. Design prevention, intervention, and educational strategies for individuals and communities to manage disease and improve health and wellness.
5. Describe the way in which population-based care influences patient-centered care and influences the development of practice guidelines and evidence-based best practices.
6. Identify problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution.
7. Educate all audiences by determining the most effective and enduring ways to impart information and assess understanding.
8. Assure that patients' best interests are represented.
9. Actively participate and engage as a healthcare team member by demonstrating mutual respect, understanding, and values to meet patient care needs.
10. Recognize social determinants of health to diminish disparities and inequities in access to quality care.
11. Effectively communicate verbally and nonverbally when interacting with an individual, group, or organization.
12. Examine and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth.
13. Demonstrate responsibility for creating and achieving shared goals, regardless of position.
14. Engage in innovative activities by using creative thinking to envision better ways of accomplishing professional goals.
15. Exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers, and society.



Plan Contents

The study plan for a bachelor's degree consists of a major in Pharmacy Of (160) credit hours disseminated as follows:

Sequence	Classification	Credit Hours	Percent %
1st	University Requirements	27	17%
2nd	College Requirements	23	14%
3rd	Program Requirements	107	67%
4th	Free subject	3	2%
Total		160	100%

Coding System Approved by the University

7	0	1	Semester	year	
College Code	Major Code		Course Level		Sequence

Knowledge Domain

Domain Code	Knowledge Domain	Credited Hours of Study Plan
1	Foundational Knowledge	50
2	Essentials for Practice and Care	35
3	Approach for Practice and Care	13
4	Personal and Professional Development	6
5	Pharmaceutical Product Expert	20
6	College Electives	9

First: University Requirements: (27) Credit Hours

A. Compulsory Requirements: (18)Credit Hours

Teaching type			Course Number	Course Title	Credited Hours	Pre-Requisite
Online E-Learning	Blended	Face-to-Face				
✓			50511104	Communication and Communication Skills 1 (Arabic)	3	((Pre) 50511108)
✓			50511105	Communication and Communication Skills 1 (English)	3	((Pre) 50511109)
✓			50511205	Life Skills and Social Responsibility	3	
✓			50511206	National Education	3	
✓			50511305	Leadership and Innovation	3	
✓			50511308	Military Sciences	3	
✓			50541209	Volunteer work and community service	0	
Total					18	

B. Elective Requirements: (9)Credit Hours from the following list:

Teaching type			Course Number	Course Title	Credited Hours	Pre-Requisite
Online E-Learning	Blended	Face-to-Face				
✓			50521106	Communication and Communication Skills 2 (Arabic)	3	((Pre) 50511104)
✓			50521107	Communication and Communication Skills 2 (English)	3	((Pre) 50511105)
✓			50521203	Principles of Psychology	3	
✓			50521204	Human Rights	3	
✓			50531101	Islamic Culture	3	
✓			50531205	Quds and Hashemite Custodianship	3	
✓			50541103	Computer Skills	3	((Pre) 50511110)
✓			50541204	Development and Environment	3	
✓			50541206	Health and Community	3	
✓			50541308	Foreign Language	3	



✓			50541208	Introduction to sustainable development	3	
✓			50541211	Introduction to artificial intelligence	3	
✓			50541309	Digital Culture	3	((Pre) 50511110)
Total					9	

Second: College Requirements: (23) Credit Hours

A. Compulsory Requirements: (23) Credit Hours

Teaching type			Course Number	Course Title	Credited Hours	Pre-Requisite
Online E-Learning	Blended	Face-to-Face				
	✓		70145158	Research Project	3	120 credit hours
		✓	7011106	Organic Chemistry	3	-
		✓	70111208	Pharmaceutical Analytical Chemistry and Instrumental Analysis	3	General Chemistry 50551103
		✓	70111209	Pharmaceutical Analytical Chemistry and Instrumental Analysis Practical	1	(Co- Requisite) Pharmaceutical Analytical Chemistry and Instrumental Analysis 70111208
		✓	50551103	General Chemistry	3	-
		✓	50551104	General Chemistry practical	1	(Co- Requisite) General chemistry 50551103
	✓		50551107	General Biology	3	-
	✓		7011105	Anatomy and Histology	2	(Co- Requisite) General biology 50551104
	✓		70111210	Physiology	3	Anatomy and Histology 7011105
		✓	70111211	Physiology Practical	1	(Co- Requisite) Physiology 70111210
Total					23	



Third: Program Requirements (107) Credit Hours

A. Compulsory Requirements: (101) Credit Hours

Teaching type			Course Number	Course Title	Credit ed Hours *	Theoretical	Practical	Pre-Requisite
Online E-Learning	Blended	Face-to-Face						
	√		70112112	Pathophysiology	3	-	-	Physiology 7011210
		√	70112215	Medicinal Chemistry (1)	3	3	-	Pharmaceutical Organic Chemistry 7011265
		√	7011265	Pharmaceutical Organic Chemistry	3	3	-	Organic Chemistry 7011106
		√	70112113	Physical Pharmacy	2	2	-	Pharmaceutical Analytical Chemistry and Instrumental Analysis 7011208
		√	70112114	Physical Pharmacy Practical	1	-	2	(Co- Requisite) Physical Pharmacy 70112113
	√		70112111	Biochemistry	2	2	-	Pharmaceutical Organic Chemistry 7011265
	√		70112110	Pharmacognosy and Phytochemistry	3	3	-	Pharmaceutical Organic Chemistry 7011265
	√		70123116	Clinical Biochemistry	3	3	-	Biochemistry 70112111
		√	70113125	Medicinal Chemistry (2)	2	2	-	Medicinal Chemistry (1) 7011215
		√	70113126	Medicinal Chemistry (2) Practical	1	-	2	Medicinal Chemistry (2) 70113125
		√	70113230	Medicinal Chemistry (3)	2	2	-	Medicinal Chemistry (2) 70113125
	√		70154244	Cosmetics	2	2	-	Pharmaceutics 70153227
		√	70154145	Cosmetics practical	1	-	2	(co-requisite) Cosmetics 70154244
		√	70124132	Biopharmaceutics and Pharmacokinetics	3	3	-	Pharmacology (1) 7012218



	√	70124134	Pharmacokinetics Practical	1	-	2	(Co- Requisite) Biopharmaceutics and Pharmacokinetics 70124132
√		70155150	Industrial pharmacy	3	3	-	Pharmaceutics 70153227
	√	70155151	Industrial Pharmacy Practical	1	-	2	(Co- Requisite) Industrial pharmacy 70155150
√		70135150	Management of pharmaceutical institutions and communication skills	2	2	-	Pharmaceutical Field Training (I) 70144266
√		70135256	Pharmacoeconomics And Pharmaceutical Marketing	3	3	-	Management of pharmaceutical institutions and communication skills 70135150
√		70112217	Microbiology	2	2	-	General biology 50551107
	√	70122218	Pharmacology (1)	3	3	-	Phathophysiology 70112112
	√	70123122	Pharmacology (2)	3	3	-	Pharmacology (1) 70122218
	√	70113128	Pharmaceutical Microbiology practical	1	-	2	(Co-requisite) Pharmaceutical Microbiology 70113127
√		70113127	Pharmaceutical Microbiology	2	2	-	Microbiology 70112217
	√	70124135	Clinical Pharmacy and Therapeutics (1)	3	3	-	Pharmacology (1) 70122218
	√	70123232	Pharmacology (3)	3	3	-	Pharmacology (2) 70123122
	√	70144266	Pharmaceutical Field Training (I)	2	-	2	Virtual Pharmacy 70144165 + Successfully complete 90 CH
	√	70145267	Pharmaceutical Field Training (2)	2	-	2	Pharmaceutical Field Training (I) 70144266
	√	70144165	Virtual Pharmacy	2	-	2	Pharmacology (3) 70123232



	√		70124243	Toxicology	2	2	-	Pharmacology (2) 701223122
	√		70125145	Over the Counter Drugs (OTC)	2	2	-	Pharmacology (3) 70123232
		√	70125147	Clinical Pharmacy and Therapeutics (2)	3	3	-	Pharmacology (2) 701223122
	√		70123124	Medicinal Phytotherapy	3	3	-	Pharmacognosy and Phytochemistry 70112110
	√		70154242	Pharmaceutical Biotechnology	3	3	-	Immunotherapy 70124138
		√	70155256	Pharmaceutical Technology	3	3	-	Industrial Pharmacy 70155150
	√		70152219	Pharmaceutical Calculation and Compounding of Dosage Forms	3	3	-	Physical Pharmacy 70112113
		√	70152220	Pharmaceutical Calculation and Compounding of Dosage Forms Practical	1	-	2	(Co-Requisite) Pharmaceutical Calculation and Compounding of Dosage Forms 70152219
		√	70134136	Clinical Cases (1)	1	-	2	(Co- Requisite) Clinical Pharmacy and Therapeutics (1) 70124135
		√	70135148	Clinical Cases (2)	1	-	2	(Co- Requisite) Clinical Pharmacy and Therapeutics (2) 70125147
		√	70125253	Clinical Pharmacy and Therapeutics (3)	3	3	-	Pharmacology (3) 70123232
	√		70153227	Pharmaceutics	2	2	-	Pharmaceutical Calculation and Compounding of Dosage Forms 70152219
		√	70153228	Pharmaceutics Practical	1	-	2	(Co- Requisite) Pharmaceutics 70153227
	√		70113229	Immunology	3	3		Pharmaceutical Microbiology 70113127



	√		70124138	Immunotherapy	3	3	-	Immunology 70113229
	√		70134139	Pharmaceutical Legislation and Ethics	1	1	-	-
	√		70134240	Pharmacovigilance and regulatory affairs	2	2	-	Pharmaceutical Legislation and Ethics 70134139
Total					98			

* Credit Hours

B. Elective Requirements: (6) Credit Hours

Teaching type			Course Number	Course Title	Credited Hours*	Theoretical	Practical	Pre-Requisite
Online E-Learning	Blended	Face-to-Face						
	√		70165267	Public health	3	3	-	Pharmaceutical Microbiology 70113127
	√		70165149	Gene Therapy	3	3	-	Pharmaceutical Biotechnology 70154242
	√		70165268	Clinical Nutrition	3	3	-	Clinical Biochemistry 70123116
	√		70165160	Drug Delivery Systems	3	3	-	Pharmacokinetics 70124133
	√		70165261	Biostatistics	3	3	-	-
	√		70165262	Drug Design	3	3	-	Medicinal Chemistry (3) 70113230
	√		70165263	Poisonous and Hallucinogenic Plants	3	3	-	Medicinal Phytotherapy 70123124
	√		70165264	First Aid	3	3	-	-
	√		70165265	Special topics	3	3	-	-
	√		70165266	Application of artificial intelligence in pharmaceutical sciences	3	3	-	-
Total					6	6	-	



C. Elective Requirements: (6) Credit Hours

Teaching type			Course Number	Course Title	Credited Hours*	Theoretical	Practical	Pre-Requisite
Online E-	Blended	Face-to-						
	√		70165267	Public health	3	3	-	Pharmaceutical Microbiology 70113127
	√		70165149	Gene Therapy	3	3	-	Pharmaceutical Biotechnology 70154242
	√		70165268	Clinical Nutrition	3	3	-	Clinical Biochemistry 70123116
	√		70165160	Drug Delivery Systems	3	3	-	Pharmacokinetics 70124133
	√		70165261	Biostatistics	3	3	-	-
	√		70165262	Drug Design	3	3	-	Medicinal Chemistry (3) 70113230
	√		70165263	Poisonous and Hallucinogenic Plants	3	3	-	Medicinal Phytotherapy 70123124
	√		70165264	First Aid	3	3	-	-
	√		70165265	Special topics	3	3	-	-
	√		70165266	Application of artificial intelligence in pharmaceutical sciences	3	3	-	-
			Total		6	6	-	

D. **Free course:** (3) Credit Hours

Teaching type			Course Number	Course Title	Credited Hours*	Theoretical	Practical	Pre-Requisite
Online E-	Blended	Face-to-						
				Free course	3			

E. **Remedial course:** (9) Credit Hours

Teaching type			Course Number	Course Title	Credited Hours*	Theoretical	Practical	Pre-Requisite
Online E-	Blended	Face-to-						
√			50511108	Remedial Course in Arabic	3	3	-	
√			50511109	Remedial Course in English	3	3	-	
√			50511110	Remedial Course in Computer Science	3	3	-	



Guidance plan

First Year

First Semester

Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
50551103	General Chemistry	Face to face	3	-	-
50551104	General Chemistry practical	Face to face	1	-	General Chemistry 50551103
50551107	General Biology	Blended	3	-	-
70111105	Anatomy and Histology	Blended	2	-	General biology 50551107
70111106	Organic Chemistry	Face to face	3	-	General Chemistry 50551103
-	University Requirement	Online	3	-	-
Total			15		



Second Semester

Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
7011208	Pharmaceutical Analytical Chemistry and Instrumental Analysis	Face to face	3	General Chemistry 50551103	-
7011209	Pharmaceutical Analytical Chemistry and Instrumental Analysis Practical	Face to face	1	-	Pharmaceutical Analytical Chemistry and Instrumental Analysis 7011208
7011265	Pharmaceutical Organic Chemistry	Face to face	3	Organic Chemistry 7011106	-
7011210	Physiology	Blended	3	Anatomy and Histology 7011105	-
7011211	Physiology Practical	Face to face	1	-	Physiology 7011210
-	University Requirement	Online	3	-	
Total			14		



Second Year

First Semester

Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
70112113	Physical Pharmacy	Face to face	2	Pharmaceutical Analytical Chemistry and Instrumental Analysis 7011208	-
70112114	Physical Pharmacy Practical	Face to face	1	-	Physical Pharmacy 70112113
70112110	Pharmacognosy and phytochemistry	Blended	3	Pharmaceutical Organic Chemistry 7011265	-
70112111	Biochemistry	Blended	2	Pharmaceutical Organic Chemistry 7011265	-
70112112	Pathophysiology	Blended	3	Physiology 7011210	-
-	University Requirement	Online	3	-	
Total			14		



Second Semester

Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
70152219	Pharmaceutical Calculation and Compounding of Dosage Forms	Blended	3	Physical Pharmacy 70112113	-
70152220	Pharmaceutical Calculation and Compounding of Dosage Forms Practical	Face to face	1	-	Pharmaceutical Calculation and Compounding of Dosage Forms practical 70152219
70112215	Medicinal Chemistry (I)	Face to face	3	Pharmaceutical Organic Chemistry 70111265	-
70112217	Microbiology	Blended	2	General biology 50551107	-
70122218	Pharmacology (I)	Face to face	3	Pathophysiology 70112112	-
-	University Requirement	Online	3	-	-
Total			15		

* Credit Hours



Third Year

First Semester					
Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
70113125	Medicinal Chemistry (2)	Face to face	2	Medicinal Chemistry (1) 70112215	-
70113126	Medicinal Chemistry (2) Practical	Face to face	1	-	Medicinal Chemistry (2) 70113125
70113127	Pharmaceutical Microbiology	Blended	2	Microbiology 70112217	-
70113128	Pharmaceutical microbiology practical	Face to face	1		Pharmaceutical Microbiology 70113127
70123122	Pharmacology (2)	Face to face	3	Pharmacology (1) 70122218	-
70123124	Medicinal Phytotherapy	Blended	3	Pharmacognosy and phytochemistry 70112110	-
70123116	Clinical biochemistry	Blended	3	Biochemistry 70112111	-
Total			15		



Second Semester					
Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
70113230	Medicinal Chemistry (3)	Face to face	2	Medicinal Chemistry (2) 70113125	-
70113229	Immunology	Blended	3	Pharmaceutical Microbiology 70113127	-
70123232	Pharmacology (3)	Blended	3	Pharmacology (2) 70123122	-
70153227	Pharmaceutics	Blended	2	Pharmaceutical Calculation and Compounding of Dosage Forms 70152219	-
70153228	Pharmaceutics Practical	Face to face	1	-	Pharmaceutics 70153227
-	University Requirement	Online	3	-	-
-	College elective	Blended	3		
Total			17		

* Credit Hours



Fourth Year

First Semester					
Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
70124132	Biopharmaceutics and Pharmacokinetics	Face to face	3	Pharmacology (I) 70122218	-
70124134	Pharmacokinetics Practical	Face to face	1	-	Biopharmaceutics and Pharmacokinetics 70124132
70124138	Immunotherapy	Blended	3	Immunology 70113238	-
70134139	Pharmaceutical Legislation and Ethics	Blended	1		-
70124135	Clinical Pharmacy and Therapeutics (I)	Face to face	3	Pharmacology (I) 70122218	-
70144165	Virtual Pharmacy	Face to face	2	Pharmacology (3) 70123232	-
70134136	Clinical Cases (I)	Face to face	1	-	Clinical Pharmacy and Therapeutics (I) 70124135
70154244	Cosmetics	Blended	2	Pharmaceutics 70153227	-
70145145	Cosmetics practical	Face to face	1	-	Cosmetics 70145244
Total			17		



Second Semester

Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
70154242	Pharmaceutical Biotechnology	Blended	3	Immunotherapy 70124138	-
70124243	Toxicology	Blended	2	Pharmacology (2) 70123122	-
70134240	Pharmacovigilance and regulatory affairs	Blended	2	Pharmaceutical Legislation and Ethics 70134139	
70144266	Pharmaceutical Field Training (I)	Face to face	2	Virtual pharmacy 70144165 + 90 CH	-
-	University requirement	Online	3		
-	University requirement	Online	3		
	College elective	Blended	3		
Total			18		

* Credit Hours



Fifth Year

First Semester

Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
70155150	Industrial pharmacy	Blended	3	Pharmaceutics 70153227	-
70155151	Industrial Pharmacy Practical	Face to face	1	-	Industrial pharmacy 70155150
70135150	Management of pharmaceutical institutions and communication skills	Blended	2	Pharmaceutical Field Training (I) 70144266	
70125147	Clinical Pharmacy and Therapeutics (2)	Face to face	3	Pharmacology (2) 70123122	-
70135148	Clinical Cases (2)	Face to face	1	-	Clinical Pharmacy and Therapeutics (2) 70125147
70145158	Research Project	Blended	3	120 CH	
70125145	Over the Counter Drugs (OTC)	Blended	2	Pharmacology (3) 70123232	-
-	University requirement	Online	3	-	-
Total			18		



Second Semester

Course No.	Course Title	Type of Learning	Credited Hours*	Prerequisite	Co-requisite
70135256	Pharmacoeconomics and Pharmaceutical Marketing	Blended	3	Management of pharmaceutical institutions and communication skills 70135150	-
70155256	Pharmaceutical Technology	Face to face	3	Industrial pharmacy 70155150	-
70125253	Clinical Pharmacy and Therapeutics (3)	Face to face	3	Clinical Pharmacy and Therapeutics (2) 70125147	-
70145267	Pharmaceutical Field Training (2)	Face to face	2	Pharmaceutical Field Training (1) 70144266	-
-	University Requirement		3	-	-
-	Free course		3	-	-
Total			17		



Courses Tree

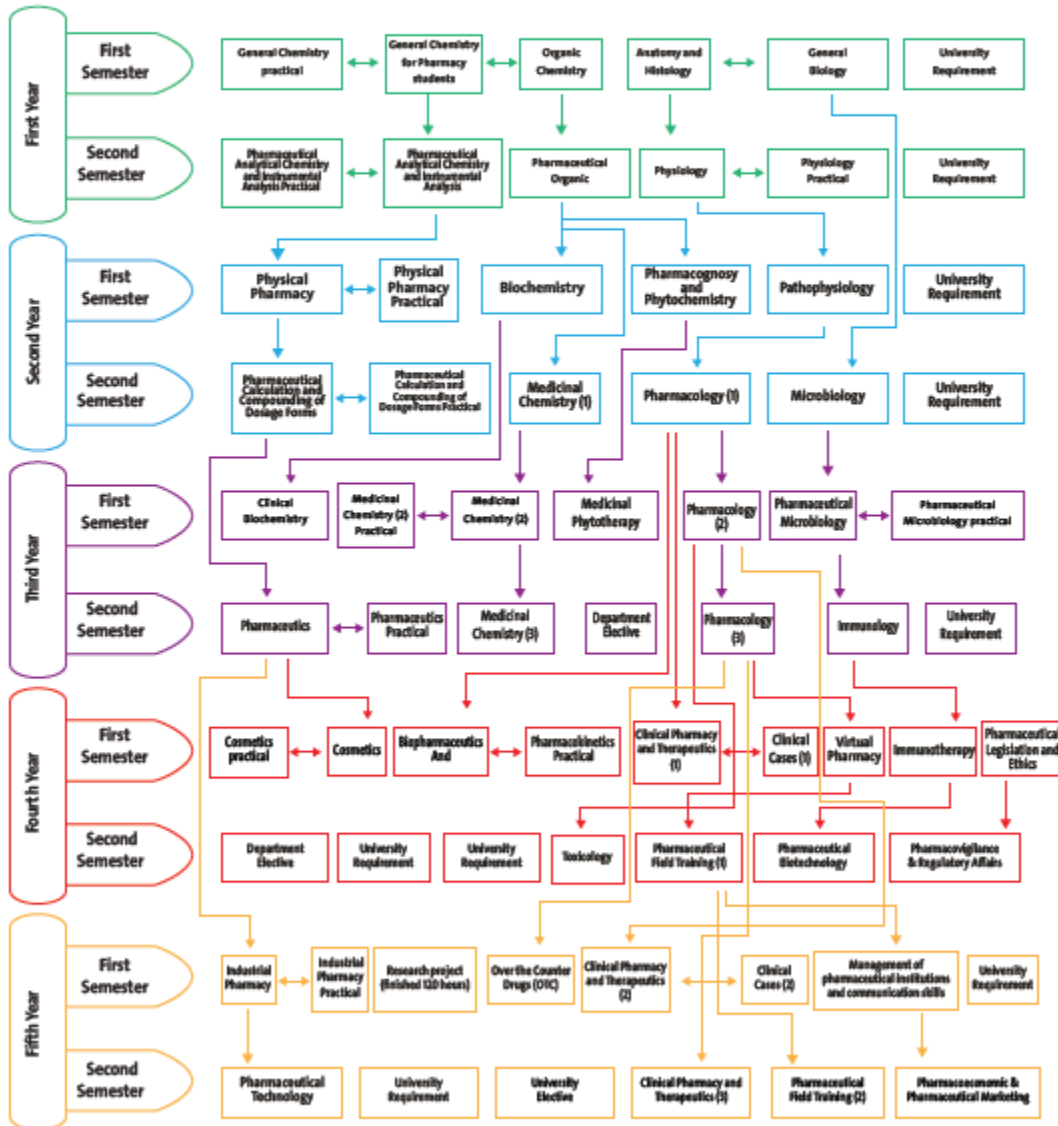


Courses Tree

College: Pharmacy
Major: Pharmacy

Department: Pharmacy
Program: Bachelor

Issue Date: 2024/2025



F566, Rev. a
Ref.: Quality Assurance Council Session (08/2021-2022), Decision No.:01, Date:21/05/2022



F026-I, Rev. d
Ref.: Deans' Council Session (16/2024-2025), Decision No.: 27, Date: 21/01/2025





Course Description

(50551103) General Chemistry, (3, L:3, P:0) Prerequisite: None, Learning Mode: Face-to-face

This course covers the following topics: scientific measurements; composition of matter; chemical measurements of formulas and equations; major categories of chemical reactions; gases and their laws; chemical equilibrium; kinetics, rates, and mechanisms of chemical reactions.

(50551104) General Chemistry Practical, (1, L:0, P:2) Corequisite: General Chemistry (50551103), Learning Mode: Face-to-face

This course introduces the basic principles of practical laboratory work. Topics include: practical safety rules, determining mass, correct usage of practical laboratory glassware, measuring density, basic separation techniques, limiting reagents, classification of chemical reactions, acid-base reactions, oxidation-reduction reactions, and the effect of common ions, ion compounds, and ionic compounds.

(50551107) General Biology, (3, L:3, P:0) Prerequisite: None, Learning Mode: Blended

This course provides a study of cell structures, functions, and membranes; cellular respiration and photosynthesis; cell division; Mendelian, non-Mendelian, and molecular genetics; kingdoms of life, their characteristics and classification; histological structure of plants and animals; human body systems; and general concepts in ecology.

(70111105) Anatomy and Histology, (2, L:2, P:0) Corequisite: General Biology (50551107), Learning Mode: Blended

This course provides an introduction to normal microscopic structures, along with their associated functions. Conversely, anatomy focuses on the general physical characteristics of organs that make up human body systems. Through in-class lectures, students will gain a comprehensive understanding of the morphology and interrelationships of human anatomical structures and the tissues that comprise these structures, with an emphasis on the relationship between a specific type of tissue in an organ and its shape and function.

**(70111210) Physiology, (3, L:3, P:0) Prerequisite: Anatomy and Histology (70111105),****Learning Mode: Blended**

This course applies basic concepts and principles of physiology across systems like the nervous, respiratory, cardiovascular, and muscular systems, and serves as a foundation for studying health and medical sciences. Students will learn about key areas of body function, including the integration of organ systems to maintain internal homeostasis, regulation of homeostasis via neural messengers, endocrine and local chemicals, the role of the autonomic nervous system in organ function, and regulation of the circulatory system in relation to the respiratory and urinary systems.

(70111211) Physiology Practical, (1, L:0, P:2) Corequisite: Physiology (70111210), Learning**Mode: Face-to-face**

This course introduces the basic principles of physiology and aims to develop students' abilities to perform measurements and observations. It includes experiments on blood, eye exams and vision tests, the endocrine system, pulse and blood pressure, muscle physiology and reflexes, respiratory physiology, and nutrition.

(70112112) Pathophysiology, (3, L:3, P:0) Prerequisite: Physiology (70111210), Learning**Mode: Blended**

This course addresses the nature of diseases in terms of their causes and the associated changes in the functions of human body organs, along with explanations of disease mechanisms, symptoms, and complications. It covers multiple topics, starting with an introductory explanation of the course and key pathological definitions, followed by discussions on diseases related to each body organ, including blood, heart and circulatory system, respiratory system, muscles and nervous system, digestive system, kidneys and body fluid regulation, endocrine system, and respiratory system.

(70111106) Organic Chemistry, (3, L:3, P:0) Corequisite: General Chemistry (50551103),**Learning Mode: Face-to-face**

This course provides an introduction to organic chemistry, covering the physical and chemical properties of organic compounds, bonding in organic compounds, Lewis structures, covalent bonding and its characteristics, hydrogen bonding and its effects on melting and boiling points



and solubility, orbital hybridization, molecular geometry, acids and bases, functional groups, alkanes, and cycloalkanes. The course covers nomenclature, preparation, and an introduction to common organic reactions: substitution, elimination, and addition reactions. Alkenes: nomenclature, preparation, and major chemical reactions. Alkynes: nomenclature, preparation, and major chemical reactions. Stereochemistry: the principles of stereochemistry, types of isomers, geometric isomers and their nomenclature using the Z and E system, recognition of optical isomers and their nomenclature using the R and S system, and organic halides: their substitution and elimination reactions.

(70113229) Immunology, (3, L:3, P:0) Prerequisite: Pharmaceutical Microbiology (70113127), Learning Mode: Blended

This course covers the basics of immunology, including the components of the immune system, its cells, organs, and normal functions, how innate and cellular immune responses occur the first and subsequent times, the types of memory cells, and how they are rapidly activated to protect the body from foreign microbes, including bacteria, viruses, and fungi. This course also discusses immune responses in organ transplantation, autoimmune diseases, allergies, immune deficiencies, organ rejection, and immune deficiencies, as well as vaccinations.

(70124138) Immunotherapy, (3, L:3, P:0) Prerequisite: Immunology (70113229), Learning Mode: Blended

This course presents modern immunological methods for treating immune-related diseases such as hypersensitivity, autoimmune diseases, rejection of transplanted organs, immune deficiency diseases, and various cancers. Additionally, the course covers immune prevention using modern vaccines to prevent many diseases, especially some cancers. This course introduces different types of vaccines and their generations in providing immune prevention from diseases in healthy individuals.

(70134139) Pharmaceutical Ethics and Legislation, (1, L:1, P:0), Prerequisite: None, Learning Type: Blended

This course introduces the fundamental legislation and laws governing the practice of pharmacy across various pharmaceutical fields. It also familiarizes students with the structure and roles of the Pharmacists' Association, as well as the ethical principles that guide their interactions with



patients, colleagues, and other healthcare professionals to ensure optimal pharmaceutical services.

(70134240) Pharmacovigilance and Regulatory Affairs, (2, L:2, P:0), Prerequisite: (70134139) Pharmaceutical Ethics and Legislation, Learning Type: Blended

This course provides the knowledge and skills required to ensure drug safety and compliance with global and local regulatory standards. It covers a comprehensive range of basic and advanced topics in drug safety and regulatory affairs. This course is a cornerstone in preparing pharmacists to work in pharmaceutical care, equipping them with the necessary knowledge to monitor, evaluate, and report drug side effects and contribute to improving drug safety.

(70112215) Medicinal Chemistry (I), (3, L:3, P:0), Prerequisite: Pharmaceutical Organic Chemistry (7011265), Learning Type: Face-to-Face

This course covers the fundamentals of pharmaceutical chemistry, including physicochemical properties such as acidity, basicity, ionization, and lipid solubility, and their effects on the pharmacokinetics and pharmacodynamics of drugs. The course also studies the basic types of bonds between drugs and receptors and how these bonds activate or inhibit receptors, whether they are proteins or enzymes. The second part of the course focuses on drug metabolism reactions (Phase I and Phase II) and the factors influencing drug metabolism. The third part applies these fundamentals to drugs affecting the peripheral nervous system, particularly those related to adrenergic and acetylcholine receptors. Students will understand the principles of drug design based on receptor interactions to create drugs that either activate or inhibit the receptor.

(7011265) Pharmaceutical Organic Chemistry, (3, L:3, P:0), Prerequisite: Organic Chemistry (7011106), Learning Type: Face-to-Face

This course studies aromatic compounds, including their physical properties, nomenclature, and the Hückel rule for aromaticity. It covers how aromaticity influences stability, the effects of substituents on reactions, and reactions involving halogenation, nitration, sulfonation, and Friedel-Crafts alkylation and acylation. Additionally, the course examines important organic functional groups such as alcohols, phenols, ethers, sulfides, aldehydes, ketones, carboxylic acids



and their derivatives, amines, and heterocyclic compounds. Each compound's physical properties, preparation methods, and chemical reactions are studied in depth.

(70112113) Physical Pharmacy, (2, L:2, P:0), Prerequisite: Pharmaceutical Analytical Chemistry and Instrumental Analysis (7011208), Learning Type: Face-to-Face

This course introduces the basics of physical pharmacy, covering topics like states of matter, solubility, dissolution, colligative properties of ionic and non-ionic solutions, diffusion, buffer solutions, and chemical kinetics. The course also addresses the physical and chemical properties of pharmaceutical forms and processes involved in drug formulation. Detailed examples and applications relevant to the studied topics are presented at the end of each unit.

(70112114) Physical Pharmacy Practical, (1, L:0, P:2), Co-requisite: Physical Pharmacy (70112113), Learning Type: Face-to-Face

This practical laboratory course provides practical applications of theoretical concepts learned in Physical Pharmacy. Students will learn to analyze experimental results, understand the relationship between states of matter and physical variables, and calculate relevant variables. Topics include preparing buffer solutions, isotonic solutions, thermal changes in solutions, diffusion, reaction rates, and the effect of temperature on reaction kinetics.

(70112111) Biochemistry, (2, L:2, P:0), Prerequisite: Pharmaceutical Organic Chemistry (7011265), Learning Type: Blended

This course covers the fundamentals of biochemistry, including acids and bases, buffer solutions, amino acids, peptides, proteins, enzymes, carbohydrates, lipids and related compounds, nucleotides, nucleic acids, vitamins, and coenzymes, as well as hormones.

(70112110) Pharmacognosy and Phytochemistry, (3, L:3, P:0), Prerequisite: Pharmaceutical Organic Chemistry (7011265), Learning Type: Blended

This course provides essential information about the classification, nomenclature, extraction, and distribution of natural products. The focus is on secondary metabolites produced by plants and microorganisms, which are important sources of natural drugs. It also covers the methods of discovery and the significance of these metabolites in pharmaceutical care.



(70123116) Clinical Biochemistry, (3, L:3, P:0), Prerequisite: Biochemistry (70112111), Learning Type: Blended

This course introduces the biochemical implications of common disorders in bodily functions and systems from a clinical perspective. Students learn to interpret practical laboratory data for diagnosis, screening, monitoring, and follow-up in health and disease. They gain the ability to understand and interpret clinical biochemistry tests and identify biochemical problems and their possible causes.

(70113125) Medicinal Chemistry (2), (2, L:2, P:0), Prerequisite: Medicinal Chemistry (1) (70112215), Learning Type: Face-to-Face

This course focuses on the physicochemical properties of antibiotics, particularly those containing beta-lactam rings, sulfonamides, antivirals, antifungals, and anti-tuberculosis agents. Students are introduced to the history of antibiotic discovery, natural sources, challenges like resistance, and solutions through structural modifications. The course emphasizes drug mechanism of action, drug-receptor interactions, enhancing selectivity to improve efficacy, reducing side effects, and addressing antibiotic resistance. Additionally, it covers anticancer drugs such as alkylating agents, platinum-based compounds, antimetabolites, antibiotics, cell division inhibitors, and novel targeted cancer therapies.

(70113126) Medicinal chemistry (2) Practical, (1, L:0, P:2), Prerequisite: Medicinal Chemistry (2) (70113125), Learning Type: Face-to-Face

This course focuses on drug molecules from various aspects, including identification tests for specific chemical groups, and how to conduct drug tests following well-documented procedures from the British or American Pharmacopeia: comparing results to the acceptable ranges provided. The second part of the course addresses the synthesis and purification of drug molecules like aspirin, paracetamol, sulfasalazine, and benzocaine using known chemical reactions and purification techniques such as crystallization, filtration, and extraction.

(70113230) Medicinal Chemistry (3), (2, L:2, P:0), Prerequisite: Medicinal Chemistry (2) (70113125), Learning Type: Face-to-Face

This course introduces central nervous system stimulants and depressants, pain relievers from the morphine family, and non-steroidal anti-inflammatory drugs (NSAIDs) alongside local anesthetics. The second part covers the development of drugs for the respiratory and



cardiovascular systems, particularly those used to treat hypertension like beta-blockers, calcium channel blockers, angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers, and medications for type 2 diabetes. Additionally, the course explores the design and development of proton pump inhibitors. Emphasis is placed on the physicochemical properties of these drug families, how these properties affect receptor binding and drug kinetics, and how structural modifications can enhance efficacy and reduce toxicity.

(70154244) Cosmetics, (2, L:2, P:0), Prerequisite: Pharmaceutics (70153227), Learning Type: Blended

This course provides knowledge about various pharmaceutical forms of cosmetics, their components, mechanisms of action, and usage. Students will learn about global and local regulations required for the manufacturing and marketing of cosmetics. The first part covers good manufacturing practices (GMP) governing cosmetics production, particularly in the US, EU, and Jordan, and the role of quality control. The second part addresses different cosmetic formulations such as shampoos, skin products, oral products, and perfumes, discussing their primary components and uses.

(70154145) Cosmetics Practical, (1, L:0, P:2), Co-requisite: Cosmetics (70154244), Learning Type: Face-to-Face

This course offers practical knowledge on preparing various pharmaceutical forms of cosmetics, their components, mechanisms of action, and usage, with a focus on global and local regulations for the manufacturing and marketing of cosmetics.

(70124132) Biopharmaceutics and Pharmacokinetics, (3, L:3, P:0), Prerequisite: Pharmacology (I) (70122218), Learning Type: Face-to-Face

This course covers the principles of biopharmaceutics and pharmacokinetics, including terminology, models, equations, and factors that influence drug absorption, distribution, metabolism, and excretion. It emphasizes predicting drug levels in plasma under various conditions using pharmacokinetic parameters and solved examples to highlight their application in clinical practice.



(70124134) Pharmacokinetics Practical, (1, L:0, P:2), Co-requisite: Biopharmaceutics and Pharmacokinetics (70124132), Learning Type: Face-to-Face

This course provides practical applications of pharmacokinetic concepts, including rate processes and drug absorption, distribution, and elimination. Students will analyze plasma concentration data to derive pharmacokinetic models, determine parameters using real data, and gain experience in calculations and data extraction techniques.

(70155150) Industrial Pharmacy (3, L:3, P:0), Prerequisite: Pharmaceutics (70153227), Learning Type: Blended

This course introduces the concepts surrounding the production of solid dosage forms, such as tablets and capsules, and the inactive components used. It covers pharmaceutical industrial processes in detail, such as drying, mixing, and powder flow, as well as pharmaceutical technology methods employed in formulating various dosage forms.

(70155151) Industrial Pharmacy Practical (1, L:0, P:2), Co-requisite: Industrial Pharmacy (70155150), Learning Type: Face-to-Face

This practical course provides advanced skills in pharmaceutical technology, with a particular focus on the methods, materials, and testing procedures related to the production of pharmaceutical tablets. Experiments cover powder flow properties, mixing, grinding, wet and dry granulation methods, particle size analysis, tablet manufacturing, compression techniques, and dissolution analysis.

(70135150) Management of Pharmaceutical Institutions and Communication Skills, (2, L:2, P:0), Prerequisite: Pharmaceutical Field Training (I) (70144266), Learning Type: Blended

This course introduces students to management methods that will assist them in working in various pharmaceutical institutions after graduation. It covers how to establish a pharmacy or drug warehouse. The course also equips students with essential communication skills for interacting with patients, healthcare providers, and the public.

(70135256) Pharmacoeconomics and pharmaceutical Marketing, (3, L:3, P:0), Prerequisite: Management of Pharmaceutical Institutions and Communication Skills (70135150), Learning Type: Blended





This course provides students with the knowledge and skills to analyze the complex economic and marketing environment of the pharmaceutical industry. Students will learn how to develop marketing campaigns tailored to pharmaceuticals and manage the product lifecycle from development to withdrawal. They will also acquire the analytical skills to evaluate market data: assess pharmaceutical products, and analyze financial performance to make informed strategic decisions.

(7012217) Microbiology, (2, L:2, P:0), Prerequisite: General Biology (50551107), Learning Type: Blended

This course offers an introduction to the different types of microorganisms, both beneficial and harmful, and the history of microbiology. It covers bacterial growth, classification, and processes, alongside discussions of viruses, fungi, and the diseases caused by these microorganisms. Additionally, the course covers basic immunology, vaccines, allergies, and the body's defense mechanisms against diseases.

(70122218) Pharmacology (1), (3, L:3, P:0), Prerequisite: Pathophysiology (70112112), Learning Type: Face-to-Face

This course introduces fundamental pharmacological concepts and the pharmacological basis for therapeutic agents. The first part covers general pharmacological principles, including pharmacodynamics and pharmacokinetics, while the second part explores drug classes in relation to major organ systems or pathophysiological diseases, including autonomic drugs, cardiovascular drugs, hematologic agents, and anti-inflammatory drugs.

(70123122) Pharmacology (2), (3, L:3, P:0), prerequisite Pharmacology (1) (70122218) Type of learning: Face to face

This course provides a continuation of Pharmacology 1. It will equip students with the fundamental information about drugs acting on the endocrine glands as well as the skeletal system and associated disorders, focusing on the mechanism of action, biotransformation, clinically relevant side effects, contraindications, and important clinical uses.

(70113127) Pharmaceutical Microbiology, (2, L:2, P:0), prerequisite Microbiology (70112217) Type of learning: Blended





This course covers the characteristics of antimicrobials in terms of type and uses, mechanisms of action, pharmacological effects, microbial resistance to these drugs, factors involved in the resistance process, its various types, and methods of combating and protecting the pharmaceutical product during and after manufacturing from microbial degradation, along with how to store medications correctly and the role of QP: QC, and the benefits of Recombinant DNA Technology in antibiotics.

(70113128) Pharmaceutical Microbiology Practical, (1, L:0, P:2), corequisite with Pharmaceutical Microbiology (70113127) Type of learning: Face to face

This course offers practical experiments to study various types of microorganisms. It also provides insights into the biological processes in bacteria: bacterial growth by different methods and culture, classification of bacteria: viruses, fungi, and diseases caused by microbes to the human body.

(70124135) Clinical Pharmacy and Therapeutics (1), (3, L:3, P:0), prerequisite Pharmacology (1) (70122218) Type of learning: Face to face

This course provides a study of various disease cases, focusing on selecting appropriate treatments, studying side effects, drug interactions, and appropriate dosages, including the study of diseases of the heart, gastrointestinal tract, respiratory system, arthritis, chronic headaches, and migraines.

(70123232) Pharmacology (3), (3, L:3, P:0), prerequisite Pharmacology (2) (70123122) Type of learning: Blended

This course covers the drugs used to treat infectious diseases (bacterial, fungal, and viral) and malignant diseases, as well as neurological diseases. The course provides students with the necessary knowledge to understand the pathophysiology of targeted diseases, the clinical manifestations, and the complications that may arise, aiming to develop students' skills in providing appropriate drug therapies, educating patients about medications, and understanding how drugs work, their side effects, potential drug interactions, and contraindications.

(70124243) Toxicology, (2, L:2, P:0), prerequisite Pharmacology (2) (70123122) Type of learning: Blended





This course presents various aspects of toxicology, providing essential information about important areas in toxicology, including the principles of toxicology, the relationship between dose and response, and the mechanisms of action of toxic substances. The course also addresses appropriate methods for detoxification in general and the toxic effects on human health of heavy metals, pesticides, and household substances such as various alcohols, and various drug groups, in addition to knowledge about antidotes for these toxins and their mechanisms of action.

**(70125145) Over-the-Counter Medications, (2, L:2, P:0), prerequisite Pharmacology (1)
(70122218) Type of learning: Blended**

This course covers medications that do not require a prescription, aimed at familiarizing students with medications available to patients who purchase them without a prescription, referred to as over-the-counter (OTC) medications. This course helps students gain the necessary knowledge to identify and dispense these medications in pharmacies without a prescription, with a focus on self-care and providing optimal patient-centered practices. The course teaches students how to distinguish between cases requiring a referral to a physician and those appropriate for treatment in the pharmacy using OTC medications. Furthermore, it equips students with the necessary knowledge and skills deemed essential for providing appropriate counseling to patients.

**(70125147) Clinical Pharmacy and Therapeutics (2), (3, L:3, P:0), prerequisite
Pharmacology (2) (70123122) Type of learning: Face to face**

This course provides knowledge of clinical manifestations and complications, drug therapy goals, and patient education regarding selected diseases of the respiratory and renal systems, infectious and gastrointestinal diseases, and muscular disorders. Additionally, it aims to equip students with knowledge of clinical uses, pharmacokinetics, clinically significant side effects, drug interactions, and contraindications for drugs used in the treatment of specific previously defined disorders.

**(70123124) Medical Phytotherapy, (3, L:3, P:0), prerequisite Phytocognosy and
phytochemistry (70112110) Type of learning: Blended**

This course provides the basic knowledge and understanding of the scientific name of medicinal plants, synonyms, English names, local names, the parts used, and the specific properties of



these plants, as well as their active components, principal structures, dosage forms, medical uses, clinical pharmacology, toxicity, warnings and precautions, adverse reactions, and interactions with other medicinal plants and manufactured drugs.

(70154242) Pharmaceutical Biotechnology, (3, L:3, P:0), prerequisite Immunotherapy

(70124138) Type of learning: Blended

This course introduces students to the divisions of DNA and gene expression in primary and developed cells, exposure to nucleic acid technology, and genetic cloning for the preparation of protein drugs and other pharmaceutical materials for treatment and detection of diseases. It covers the different vectors and how to isolate therapeutic proteins produced and methods for purifying and delivering them to therapeutic doses and modern administration methods, as well as explaining how insulin/interferons are produced and their advantages and disadvantages, in addition to methods for improving and producing vaccines.

(70155256) Pharmaceutical Technology, (3, L:3, P:0), prerequisite Industrial Pharmacy

(70155150) Type of learning: Face to face

This course presents the fundamental concepts for updating the theories and technologies used for formulating and evaluating all pharmaceutical forms. It is designed to help students achieve the primary goal of pharmaceutical technology in formulating drugs in all forms, recognizing the challenges faced by pharmaceutical scientists in overcoming biological barrier properties, and developing and designing a high-quality product in a scientific practical manner.

(70145158) Research Project, (3, L:3, P:0), prerequisite (Completion of 120 credit hours successfully) Type of learning: Blended

This course involves conducting research in one of the pharmaceutical sciences under the supervision of a faculty member in the College of Pharmacy. Students must conduct a lecture and discussion for the presented research, providing the required information for writing regarding methods, results, and discussion, and how to write the sources used in the research.

(70144165) Virtual Pharmacy, (2, L:0, P:2), prerequisite Pharmacology (3) (70123232)

Type of learning: Face to face





This course presents how to use and integrate technology into the practice of pharmacy, learning how to correctly use various pharmaceutical dosage forms, conducting patient education, learning how to read and handle prescriptions, and learning how to interact and communicate with other healthcare providers. Additionally, students are expected to become familiar with the brand names of the most common medications in Jordan and acquire knowledge about the principles of pharmacy management. Furthermore, students are expected to know how to calculate the costs of medications covered by insurance companies.

(70144266) Pharmaceutical Field Training (1), (2, L:0, P:2), prerequisite Virtual Pharmacy (70144165) + 90 credit hours Type of learning: Face to face

This course covers how to use and integrate technology into the practice of pharmacy, learning how to correctly use various pharmaceutical dosage forms, conducting patient education, learning how to read and handle prescriptions, and learning how to interact and communicate with other healthcare providers. Additionally, students are expected to become familiar with the brand names of the most common medications in Jordan and acquire knowledge about the principles of pharmacy management. Furthermore, students are expected to know how to calculate the costs of medications covered by insurance companies.

(70145267) Pharmaceutical Field Training (2), (2, L:0, P:2), prerequisite (70144266) Pharmaceutical Field Training (1) Type of learning: Face to face

This course provides the necessary knowledge in patient counseling in the context of the virtual pharmacy as a simulation of the reality of Jordanian pharmacies. This live application in practice can guide patient interest towards healthcare, which includes pharmaceutical counseling and management in actual pharmacies.

(70134136) Clinical Cases (1), (1, L:0, P:2), corequisite with Clinical Pharmacy and Therapeutics (1) (70124135) Type of learning: Face to face

This course provides the foundations and skills necessary to achieve optimal pharmaceutical practice in community pharmacies. The course covers methods for handling prescriptions, inappropriate uses of medication, and monitoring drug interactions. This course also empowers students with the communication skills necessary during pharmaceutical practice.



(70135148) Clinical Cases (2), (1, L:0, P:2), corequisite with Clinical Pharmacy and Therapeutics (2) (70125147) Type of learning: Face to face

This course provides the foundations and skills necessary to achieve optimal pharmaceutical practice in hospitals. The course covers how to apply drug information, pharmaceutical clinical skills and practices, appropriate methods of communication with patients, and providing pharmaceutical services regarding the practice of the profession. This course also empowers students with the communication skills necessary during pharmaceutical practice and provides pharmaceutical counseling to patients based on the principle of evidence-based science.

(70111208) Analytical Chemistry and Pharmaceutical Instrumental Analysis, (3, L:3, P:0), prerequisite General Chemistry (50551103) Type of learning: Face to face

This course presents various aspects of analytical chemistry covering qualitative and quantitative chemical analysis. It includes stoichiometric calculations, acid-base equilibrium in solutions, buffer solutions, and acid-base titration. Additionally, it will focus on the principles, instruments, and basic applications of instrumental chemical analysis methods used in the examination of raw materials and pharmaceutical formulations. This includes spectroscopic analysis of visible and ultraviolet light, as well as gas and liquid chromatography.

(70111209 Analytical Chemistry and Pharmaceutical Instrumental Analysis Practical, (1, L:0, P,2), Corequisite Analytical Chemistry and Pharmaceutical Instrumental Analysis (70111208) Learning Type: face to face

This course provides the fundamental principles of analytical chemistry. The first part of the course will cover the preparation of reagents. The analysis of unknowns using various qualitative and quantitative analytical methods will also be covered. The second part will focus on the practical applications of instrumental chemical analysis methods used in the examination of raw materials and pharmaceutical formulations, including spectroscopic analysis of visible and ultraviolet light, and gas and liquid chromatography.

(70152219) Calculations and Formulations of Pharmaceutical Dosage Forms, (3, L:3, P,0), Prerequisite: Physical Pharmacy (70112113) Learning Type: Blended





This course presents various liquid pharmaceutical dosage forms such as syrups and drops, their formulation methods, and the purpose of their use, transforming chemical substances into medicinal forms, and studying the physicochemical properties of pharmaceutical dosage forms.

(70152220) Calculations and Formulations of Pharmaceutical Dosage Forms Practical, (1, L:0, P,2), Calculations and Formulations of Pharmaceutical Dosage Forms (70152219)

Learning Type: Face to face

This course trains students on the steps for preparing and the principles of selecting components involved in liquid pharmaceutical formulations such as syrups and drops, packaging, adhesives, and preserving pharmaceutical formulations in their final form to ensure a stable and effective compound.

(70153227) Pharmaceutics, (2, L:2, P,0), Prerequisite: Calculations and Formulations of Pharmaceutical Dosage Forms (70152219) Learning Type: Blended

This course presents various pharmaceutical dosage forms and preparations such as creams, gels, suppositories, and sprays, including their formulation methods, the purpose of their use, transforming chemical substances into medicinal forms, and studying the physicochemical properties of pharmaceutical dosage forms.

(70153228) Pharmaceutics Practical, (1, L:0, P,2), Corequisite with Pharmaceutics (70153227) Learning Type: Face to face

This course trains students on the steps for preparing and the principles of selecting components involved in semi-solid and solid pharmaceutical formulations, packaging, adhesives, and preserving pharmaceutical formulations in their final form to ensure a stable and effective compound.

(70125253) Clinical Pharmacy and Therapeutics (3), (3, L:3, P,0), Prerequisite: Pharmacology (3) (70123232) Learning Type: Face to face

This course provides students with knowledge about clinical manifestations, complications, therapeutic goals, and patient education for selected diseases. Furthermore, this course aims to equip students with knowledge about clinical uses, pharmacokinetics, clinically significant side



effects, drug interactions, and contraindications of medications used in the treatment of selected disorders.

(70165260) Drug Delivery Systems, (3, L:3, P,0), Prerequisite: Biopharmaceutics and Pharmacokinetics (70124132) Learning Type: Blended

This course investigates the physicochemical and biological properties related to the design and manufacturing of various methods for drug delivery in the body, including transdermal systems, liposomes, monoclonal antibodies, and targeted delivery systems.

(70165261) Biostatistics, (3, L:3, P,0), Prerequisite: (None) Learning Type: Blended

This course studies descriptive and inferential statistics as applied in medical fields. The material begins with an introduction to fundamental statistical concepts applicable to medical sciences, covering specific topics such as tools for describing the central tendency and dispersion of data, probability concepts, statistical hypothesis testing and its application to group comparisons, sampling methods, and various statistical measures. Students will be trained to derive statistical inferences through estimation and hypothesis testing using relevant clinical examples.

(70165262) Drug Design, (3, L:3, P,0), Prerequisite: Medicinal Chemistry (3) (70113230) Learning Type: Blended

This course applies what has been learned about the chemical properties of various drugs and their receptors and their relationship to efficacy and toxicity in Medicinal Chemistry (2,3,1). It introduces students to the basic steps in the drug discovery phase, including the use of computers, chemical modeling, and controlling the structural design of both the receptor and the drug using virtual screening for new drugs. It focuses on studying the properties of lead compounds and methods for their development to design new compounds and enhance efficacy. The course also studies drug interactions with enzymes and receptors at the molecular level, focusing on the physicochemical factors affecting drug binding. The final part of this material covers new drug design methods such as DNA-linked drugs and prodrugs, which are typically activated through metabolic processes within the body.

(70165263) Poisonous and Hallucinogenic Plants, (3, L:3, P,0), Prerequisite: Medical phytotherapy (70123124) Learning Type: Blended





This course provides knowledge about toxic and hallucinogenic plants and their effects on health in general, including their botanical origin, distribution, general recipes, chemical components, symptoms of poisoning, antidotal treatment, and clinical management. Additionally, it offers useful information on managing poisoning from toxic plants, as well as medicinal plants used incorrectly, with a primary focus on the toxic parts of the plant.

(70165264) First Aid, (3, L:3, P,0), Prerequisite: (None) Learning Type: Blended

This course provides the essential skills and knowledge needed to recognize injuries and incidents and intervene accordingly at the scene of the accident. It also equips students with the necessary skills to assess emergency incidents and implement first aid procedures that would prevent further complications using available resources until the injured/patient is transported to the hospital.

(70165249) Gene Therapy, (3, L:3, P,0), Prerequisite: Pharmaceutical Biotechnology (70154242) Learning Type: Blended

This course provides a clear understanding of how to identify disease-causing genes, their impact on disease diagnosis, prevention, and treatment. It discusses methods for isolating disease-causing genes, various gene therapy methods, and current human gene therapy approaches. Additionally, the course covers regulatory aspects related to biological materials and their use in treating various diseases, particularly different types of cancers and other diseases for which there are currently no available treatments.

(70165265) Special Topics in Pharmacy, (3, L:3, P,0), Prerequisite: None Learning Type: Blended

This course presents emerging issues, current trends, and specialized areas in the field of pharmacy practice and pharmaceutical sciences. Through a series of lectures, seminars, and practical exercises, students will delve into selected topics.

(70165266) Applications of Artificial Intelligence in Pharmaceutical Sciences, (3, L:3, P,0), Prerequisite: None Learning Type: Blended





This course presents applications of artificial intelligence in various fields of pharmaceutical sciences and clinical pharmacy, enabling students to keep pace with modern developments in integrating technology with healthcare.

(70165267) Public Health, (3, L:3, P,0), Prerequisite: Pharmaceutical Microbiology

(70113127) Learning Type: Blended

This course provides a comprehensive overview of public health and its various fields, including disease prevention, health promotion, health education, and monitoring of communicable and non-communicable diseases. It will focus on analyzing health challenges at local and global levels and developing strategies to address them through health policies and preventive practices. The course will also study the impact of social and environmental factors on the health of individuals and communities.

(70165268) Clinical Nutrition, (3, L:3, P,0), Prerequisite: Clinical Biochemistry (70123116)

Learning Type: Blended

This course provides essential knowledge in the field of therapeutic nutrition, focusing on the role of nutrition in disease prevention and treatment. Topics include studying the body's nutritional needs, designing therapeutic dietary systems, and the role of nutrition in managing chronic diseases such as diabetes, heart disease, and obesity. Additionally, it covers the fundamentals of nutritional assessment and dietary guidance for patients within various healthcare settings.