

Republic of Yemen
Ministry of Higher Education & Scientific Research

**21 SEPTEMBER UNIVERSITY for MEDICALS and
APPLIEED SCIENCES**



21 September University for Medical and Applied Sciences

Faculty of Clinical Pharmacy

Clinical Pharmacy Program Specification Document

❖ Papered by Committee Members:

- Ass. Prof. Dr. Ali Alyahawi
- Prof. Dr. Ali Alkaf

This template of program specifications was prepared by CAQA, Yemen, 2018.



1. Basic and general Information about the program

Program Title	Clinical Pharmacy Program
Awarding Institution	21 September University for Medical and Applied Sciences
Institution responsible for the program	Faculty of Clinical Pharmacy
Program type	Single
Language of Instruction	English
Year of study in the program	Five years.
Mode of delivery	Regular, minimum attendance 75%
Teaching Institution	Faculty of Clinical Pharmacy
System of study	Semester Based System
Duration of study	Complete 180 credit hours
Final Award/s available	Bachelor's degree
Award title	Bachelor of Doctor of Clinical Pharmacy Program
Prerequisite Qualification for admission to the program	Secondary School Certificate (Scientific Section)
Average Grade for Joining the program	As per the admission rules made by Ministry of Higher Education and Scientific Research, Republic of Yemen, and university rules.
Other requirements	N/A
Coordinator	-
Last date of accreditation	N/A

2. Program Overview:

This program is unique and excellent Pharmacy program in which the graduate obtains the bachelor of Clinical Pharmacy. These graduates are distinguished by their knowledge, theoretical and practical skills, and their abilities to work effectively among the health care team. The Bachelor of Clinical Pharmacy program is five years. The graduate student from this program should be completed 180 credits hours.

3. Vision, Mission & Aims of the University.

University Vision:

A Contemporary University with a Sense of National Responsibility and Faith Identity

University Mission:

Leadership of transformation/upturning headway in managing and providing the health care with all partners via having the distinction standard in education and applied and medical researches that meet the needs of Yemeni people and regional influence

University Strategic Objectives:

- 1- Ensuring the application of quality standards and having the distinction standards in medical and applied sciences, scientific research and community service.
- 2- Adopting student-centered learning, the partnership with them for life, consolidating the principles of national responsibility and faith identity, looking after them and developing their capabilities after graduation and during work.
- 3- Attracting and Employing scientists, cadres and talents to gain minds and put an end for the “brain drain” in a way that promotes and ensures the availability of thinkers, businessmen and good citizens.
- 4- Developing the distinguished academic infrastructure continuously and establishing modern research and service centers with high efficiency that can give a real effect locally and regionally.
- 5- Enhancing the university status as a preferred partner for local, regional and international partnership through implementing creative styles of education, exchanging researches and knowledge, and providing real and effective outcomes for developing professional practices to benefit from them locally and regionally.

4. Vision, Mission & Aims of the Faculty of Clinical Pharmacy.

Faculty Vision:

A contemporary college of clinical pharmacy, capable of competitiveness Locally and Regionally.

Faculty Mission:

Preparing distinguished pharmacists scientifically and practically qualified through modern academic programs and achieve excellence in pharmacy education, pharmaceutical research, and community service to meet the requirements of Yemeni society in a professional context.

Faculty Objectives:

- 1- Produce graduates capable of provision of high-quality pharmacy care services.

- 2- Graduate pharmacists with all scientific knowledge and skills needed to make therapeutic decisions and evaluate drug information based on evidence-based principles.
- 3- Qualifying pharmacist capable of manufacturing and analyzing all forms of pharmaceutical preparations with their various sources in accordance with GLP and GMP standards.
- 4- Graduate pharmacists with all basic information to manage human and material resources effectively and communicate ethically with health care workers based on scientific principles.
- 5- Graduate pharmacists with basic skills of the scientific research and the use of medication in the health care system.
- 6- Effective contribution to community service and meeting the requirements of the labor market.

5. Program Standards& Benchmarks:

A. Academic Standards:

1. National Academic Reference Standards for Undergraduate Pharmacy Education Program (Doctor of Pharmacy/ PharmD), April 2022 (First Edition)
2. Criteria for Accrediting in Yemen council of academic accreditation .

B. Government Rules and Regulations:

1. Act No. 13/2005 of the Law of private universities, higher institutes and colleges, Yemen.
2. The executive regulations of Act No. 13/2005 of the Law of private universities, higher institutes and colleges, Yemen.

C. Similar Programs:

- 1- Lebanese International University, School of Pharmacy & Medical Sciences, Department of Clinical Pharmacy, Bachelor of Clinical Pharmacy.
<https://ye.liu.edu.lb/Academics/School%20of%20Pharmacy%20&%20Medical%20Sciences.php>
- 2- China Pharmaceutical University, School of Basic Medicine & Clinical Pharmacy, Department of Clinical Pharmacy, B. Sc. in Clinical Pharmacy. <https://cpu.cucas.cn/program/Clinical-Pharmacy-20348.html>
- 3- Mansura University, Faculty of Pharmacy, Department of Pharmacy, Bachelor of Clinical Pharmacy
<http://pharfac.mans.edu.eg/index.php?lang=en>
- 4- Alexandria University, Faculty of Pharmacy, Bachelor of Pharmacy (Clinical Pharmacy).
<https://pharmacy.alexu.edu.e>

5- University of SANTO TOMAS, School of Pharmacy, Bachelor of Science in Clinical Pharmacy. <https://www.ust.edu.ph/academics/programs/bachelor-of-science-in-pharmacy-major-in-clinical-pharmacy>

6. Mission & Aims of the Program.

Program Mission:

The program aims to provide pharmaceutical education in all aspects of pharmacy practice using principles of comprehensive pharmaceutical care that develop and improve the professional skills necessary to prepare and qualify graduates who are able to provide solutions to medication problems and improve the health and quality of care locally and regionally.

Aims of the Program:

1. Graduate distinguished pharmacists with professional essential skills such as teamwork, leadership, creative thinking, and work ethics.
2. Providing students with basic and professional knowledge leading to the Pharm D degree
3. Provide students with professional abilities to provide patient-centered care through the provision of safe and effective medicines
4. Provision of continued pharmaceutical education and participation in the field of scientific publications
5. Participate in process of improving professional qualification and competency locally, regionally, and internationally.

7. Graduate Attributes of the program

Upon successful completion of an undergraduate Clinical Pharmacy program, the graduates will be able to:

1. Develop, integrate, and apply knowledge from the foundational and clinical sciences related to pharmacy education and practice.
2. Provide a patient-centered care as the medication expert.
3. Identify problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution.
4. Work ethically and legally as part of a team with leadership and communication skills.
5. Express self-awareness for continuous professional improvement.

8. Program Intended Learning Outcomes (PILOs)

❖ PILOs of Knowledge and Understanding Skills:

Upon successful completion of an undergraduate Clinical Pharmacy program, the graduates will be able to:

- A1.** Define the fundamentals of scientific knowledge and principles of biomedical, pharmaceuticals, social, behavioral, administrative, therapeutics, and other basic sciences related to the pharmacy profession.
- A2.** Illustrate the physicochemical and pharmacokinetic properties of medicines and their influence on compounding, evaluation, analysis, route of administration, and dosage regimen.
- A3.** Identify broad knowledge about the mechanism of action, effectiveness, use, safety, side effects, and interactions of therapeutic agents as well as the complementary therapies.
- A4.** Recognize the advanced concepts of professional (ethics, policies, laws, regulations requirements, management pharmacovigilance, Pharmacoepidemiology, pharmacoeconomic, pharmacoinformatic, research studies, sources of information.... etc) to optimize the therapeutic outcomes.
- A5.** Describe the role of pharmacists in patient care; dispensing, designing, implementing, monitoring, evaluating, and adjustment of medication therapy plans that are patient-specific and evidence-based to achieve maximum clinical effectiveness.

❖ PILOs of Intellectual Skills:

Upon successful completion of an undergraduate Clinical Pharmacy program, the graduates will be able to:

- B1.** Integrate the physicochemical properties of medicines to compounding, preparation, and analysis of parenteral nutrition, I.V admixtures, and small-batch preparation.
- B2.** Predict the drug properties including the bio-pharmaceutics, pharmacokinetics, pharmacodynamics and their applications.
- B3.** Merge the pharmacological knowledge about natural and synthetic medicines with policies, information systems, workforces, service delivery, pharmacovigilance, pharmacoepidemiology, and pharmacoeconomic factors to enhance the healthcare systems.
- B4.** Formulate an appropriate pharmacotherapy care plan and monitoring strategies to solve practice problems and improve patient safety and efficacy through utilization of pharmacodynamic, pharmacokinetic parameters of medicines as well as diseases pathophysiology and research outcomes.

❖ PILOs of Professional Skills and Practices:

Upon successful completion of an undergraduate Clinical Pharmacy program, the graduates will be able to:

- C 1. Deal safely and effectively with biotechnological, radio-pharmaceuticals, and synthetic/natural pharmaceutical materials/products used in pharmaceutical preparations.
- C 2. Compound/prepare extemporaneous, cytotoxic, I.V admixture, parenteral nutrition, and small-batch pharmaceutical preparation taking into account the physicochemical properties of drug structures.
- C 3. Contribute to creating/improving national drug policies, laws, and regulations related to the health care systems.
- C 4. Implement patient-oriented pharmaceutical care legally and ethically in a variety of patient care settings in collaboration with patients and other health care professionals according to professional standards, appropriate therapeutic guidelines, and research outcomes.

❖ PILOs of General and Transferable Skills:

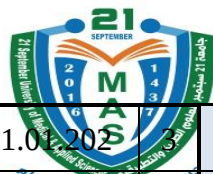
Upon successful completion of an undergraduate Clinical Pharmacy program, the graduates will be able to:

- D 1. Display ethically and legally leadership, time management, critical thinking, problem-solving, communication, team-work, independence, creativity, innovation, entrepreneurial, delegation, and organizational skills
- D 2. Develop life-long learning, in particular an awareness of the need for continuing education, research, scholarship, and professionalism in the field of pharmaceutical practice.
- D 3. Use digital pharmacy health improvement and educational technologies efficiently.

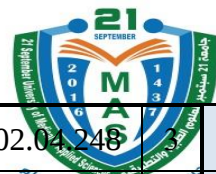
9. Curriculum Map																				
Year	Term	Course Name	Course Code	CH	Program Intended Learning Outcomes (PILOs)															
					A. Knowledge and understanding					B. Intellectual Skills				C. Practical & Professional Skills				D. Transferrable Skills		
					A1	A2	A3	A4	A5	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3
1	1	Islamic Culture	06.11.205	2																
		English Language 1	06.11.203	2	☑															
		Arabic language 1	06.11.201	2																
		Human Biology	03.01.209	3	☑					☑										
		Fundamentals of Nursing	04.01.217	1																
		Fundamentals of Health Management	05.02.224	2																
		General Chemistry	02.04.243	3	☑					☑										
		Medical Physics	06.11.208	3	☑		☑			☑										
		National culture	06.11.206	2																
		English Language II	06.11.204	2	☑															
		Medical Terminology	04.01.218	2	☑		☑													☑
		Human Anatomy	01.01.201	3	☑					☑										

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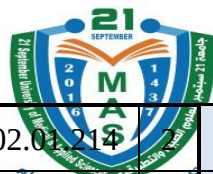




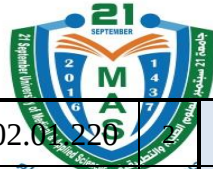
2	2	Histology	01.01.202	3	☒					☒								
		Computer Skills	05.03.221	3	☒													
		Arabic Language 2	06.11.202	3	☒													
		The Arab Israeli Conflict	06.11.207	2	☒													
		Communication skills	05.01.220	2		☒										☒	☒	
		Introduction to Pharmacy	02.01.275	1		☒												☒
2	1	Human Physiology-I	01.01.203	2	☒					☒								
		Physical Pharmacy	02.02.227	3	☒					☒								
		Pharmaceutical Organic Chemistry-I	02.04.244	3		☒		☒			☒		☒					☒
		Biochemistry-I	03.01.207	2	☒					☒			☒					☒
		Pharmaceutical Analytical Chemistry	02.04.246	3				☒			☒		☒			☒		☒
		Pharmacognosy-I	02.04.249	3					☒			☒			☒		☒	☒
		Pharmaceutical Calculations	02.02.228	1					☒			☒			☒			☒
		Medical statistics	05.02.222	2					☒			☒					☒	☒
	2	Human Physiology II	01.01.206	2	☒					☒								
		Pharmaceutics-I	02.02.229	3			☒		☒		☒		☒				☒	
		Pharmaceutical Organic Chemistry-II	02.04.245	3	☒		☒			☒		☒						☒
		Biochemistry-II	03.01.213	2	☒					☒			☒					☒
		Pharmacognosy-II	02.04.252	3					☒			☒			☒		☒	☒
		Pharmacology-I	02.03.236	2	☒				☒		☒		☒			☒		☒
3	1	Basic Microbiology	03.02.210	3	☒					☒			☒			☒		☒
		Phytochemistry	02.04.253	3					☒			☒			☒		☒	☒



4	2	Medicinal Chemistry-I	02.04.248	3			✓			✓				✓			✓
		Pharmaceutics-II	02.02.231	3			✓		✓		✓		✓			✓	
		Pharmacology-II	02.03.237	3	✓				✓		✓			✓			✓
		Public Health	01.02.204	2													
	2	Pharmacology-III	02.03.238	3	✓				✓		✓			✓			✓
		Pharmaceutics-III	02.02.234	3			✓			✓			✓				✓
		Medicinal Chemistry II	02.04.250	3	✓				✓		✓			✓			✓
		Immunology	03.02.211	2	✓					✓			✓			✓	✓
		Parasitology	03.04.212	3	✓					✓			✓				✓
		General Pathology	01.01.205	3	✓					✓							✓
	1	Pharmacology-IV	02.03.239	2	✓				✓		✓			✓			✓
		Pharmacy Management	05.01.219	1										✓	✓	✓	✓
		Clinical Biochemistry-I	03.01.215	2	✓					✓			✓				✓
		Pharmacotherapy-I	02.01.212	2	✓				✓		✓			✓	✓	✓	✓
		Case Studies in Pharmacotherapy-I: “case-based seminars”	02.01.265	1	✓				✓					✓	✓	✓	✓
		Pharmaceutical Care- I	02.01.217	1	✓				✓		✓			✓	✓	✓	✓
		Pharmacogenomics & Gene Therapy	02.01.270	2	✓					✓				✓			✓
		Medicinal Chemistry-III	02.04.274	3			✓			✓			✓				✓
		Research Methodology	05.02.223	2					✓					✓	✓	✓	✓



5	2	Biopharmaceutics & Pharmacokinetics	02.01.214	2															
		Clinical Pharmacokinetics	02.01.223	3															
		Clinical Nutrition	02.01.211	2															
		Clinical Biochemistry 2	03.01.216	2															
		Community Pharmacy	02.01.216	2															
		Pharmacotherapy-II	02.01.215	2															
		Case Studies in Pharmacotherapy-II: "case-based seminars"	02.01.266	1															
		Pharmaceutical Care-II	02.01.271	1															
		Community Pharmacy Clerkship*	02.01.274	3															
		Pharmaceutical Instrumental Analysis	02.04.251	3															
5	1	Pharmacotherapy-III	02.01.218	2															
		Case Studies in Pharmacotherapy-III: "case-based seminars"	02.01.267	1															
		Pharmacoeconomics and Health Outcomes	02.02.233	2															
		Drug Information and Evidence-Based Practice	02.02.232	1															
		Clinical Toxicology	02.03.242	3															
		Pharmaceutical Biotechnology	02.03.241	2															
		Pharmaceutical Marketing & Drug Promotion	02.02.235	2															
		Clerkship-I	02.01.221	3															
		Hospital Pharmacy	02.01.213	2															



	Faculty of Pharmacy Unit of Development & Quality assurance	Pharmacotherapy-IV	02.01.226	1	☒			☒		☒				☒		☒	☒	
		Case Studies in Pharmacotherapy-IV: "Case-based seminars"	02.01.268	1	☒			☒		☒		☒			☒	☒	☒	☒
	2	Pharmacotherapy-V	02.01.222	2	☒			☒		☒		☒			☒	☒	☒	☒
		Case Studies in Pharmacotherapy-V: "case-based seminars"	02.01.269	1	☒			☒		☒		☒			☒	☒	☒	☒
		Medication Safety and Health Information Technology	02.04.276	2				☒		☒	☒	☒			☒		☒	☒
		Pharmacy law & Legalization	05.02.224	2		☒		☒			☒				☒	☒		
		Complementary and alternative medicine	02.01.273	2				☒										☒
		Practical-based Research Project	02.01.22	1				☒				☒			☒			
		Clerkship-II	02.01.225	3	☒			☒		☒		☒			☒	☒	☒	☒

11. Study Plan for the Bachelor of Clinical Pharmacy (180 CH)

A. University Requirements (17 Credit hours)							
No.	Course Code	Course Name	Theoretical	Seminar	Practical	Training	CH
1	06.11.205	Islamic Culture	2				2
2	06.11.203	English Language 1	2				2
3	06.11.201	Arabic language 1	2				2
4	06.11.206	National culture	2				2
5	06.11.204	English Language II	2				2
6	06.11.202	Arabic Language 2	2				2
7	06.11.207	The Arab Israeli Conflict	2				2
8	05.03.221	Computer Skills	2		2		3
Total			16		2		17
Total of Credit Hours			17				

B. Faculty Requirements (17 Credit hours)							
No.	Course Code	Course Name	Theoretical	Seminar	Practical	Training	Total
1	03.01.209	Human biology	2		2		3
2	02.04.243	General Chemistry	2		2		3
3	06.11.208	Medical physics	2		2		3
4	04.01.218	Medical terminology	2				2
5	05.02.222	Medical Statistics	2				2
6	05.02.223	Research Methodology	2				2
7	05.02.224	Fundamentals of Health Management	2				2
8	05.01.220	Communication skills	2				2
Total			16		6		19
Total of Credit Hours			19				

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C. Requirements for Faculty Departments (106 Credit hours)							
No.	Course Code	Course Name	Theoretical	Seminar	Practical	Training	Total
1.	01.01.201	Human Anatomy	2		2		3
2.	01.01.202	Histology	2		2		3
3.	02.01.275	Introduction to Pharmacy	1				1
4.	04.01.217	Fundamentals of Nursing			2		1
5.	02.02.228	Pharmaceutical Calculations	1				1
6.	01.01.203	Human Physiology-I	2				2
7.	02.02.227	Physical Pharmacy	2		2		3
8.	01.02.204	Public Health	2				2
9.	02.04.244	Pharmaceutical Organic Chemistry-I	2		2		3
10.	03.01.207	Biochemistry-I	2				2
11.	02.04.246	Pharmaceutical Analytical Chemistry	2		2		3
12.	02.04.249	Pharmacognosy-I	2		2		3
13.	01.01.206	Human Physiology-II	2				2
14.	02.02.229	Pharmaceutics-I	2		2		3
15.	02.04.245	Pharmaceutical Organic Chemistry-II	2		2		3
16.	03.01.213	Biochemistry-II	2		2		3
17.	02.04.263	Pharmacognosy-II	2		2		3
18.	02.04.251	Pharmaceutical Instrumental Analysis	2		2		3
19.	02.03.236	Pharmacology-I	2				2
20.	03.02.210	Basic Microbiology	2		2		3
21.	02.04.248	Phytochemistry	2		2		3
22.	02.02.231	Medicinal Chemistry-I	2		2		3
23.	02.03.237	Pharmaceutics-II	2		2		3
24.	02.03.238	Pharmacology-II	2		2		3
25.	02.02.234	Pharmacology-III	2		2		3
26.	02.04.250	Pharmaceutics-III	2		2		3
27.	03.02.211	Medicinal Chemistry-II	2		2		3
28.	03.04.212	Immunology	2				2
29.	01.01.205	Parasitology	2		2		3
30.	02.03.239	General Pathology	2		2		3
31.	02.04.248	Pharmacology-IV	2				2
32.	05.01.219	Pharmacy Management	1				1
33.	02.04.274	Medicinal Chemistry-III	3				3
34.	02.01.214	Biopharmaceutics & Pharmacokinetics	2				2

35.	02.02.233	Pharmacoeconomics & Health Outcomes	2				2
36.	02.04.275	Complementary & Alternative Medicine	2				2
37.	02.01.213	Hospital Pharmacy	2				2
38.	02.01.216	Community Pharmacy	2				2
39.	02.03.242	Clinical Toxicology	2		2		3
40.	02.03.241	Pharmaceutical Biotechnology	2				2
41.	02.02.235	Pharmaceutical Marketing & Drug promotion	2				2
42.	05.02.224	Pharmacy law & Legalization	2				2
43.	02.01.273	Community Pharmacy Clerkship*				3	3
Total of Credit Hours			106				

D. Clinical Pharmacy Program Requirements (37 Credit hours)							
No.	Course Code	Course Name	Theoretical	Seminar	Practical	Training	Total
1.	02.02.232	Drug Information & Evidence-Based Practice	1				1
2.	03.01.215	Clinical Biochemistry-I	2				2
3.	02.01.212	Pharmacotherapy-I	2				2
4.	02.01.265	Case Studies in Pharmacotherapy-I: "Case-based seminars"		2			1
5.	02.01.217	Pharmaceutical Care-I		2			1
6.	02.01.270	Pharmacogenomics	2				2
7.	02.01.223	Clinical Pharmacokinetics	2				2
8.	02.01.211	Clinical Nutrition	2				2
9.		Clinical Biochemistry-II	2				2
10.	02.01.215	Pharmacotherapy-II	2				2
11.	02.01.266	Case Studies in Pharmacotherapy II: "case-based seminars"		2			1
12.	02.01.271	Pharmaceutical care-II		2			1
13.	02.01.218	Pharmacotherapy-III	2				2
14.	02.01.267	Case Studies in Pharmacotherapy III: "Case-based seminars"		2			1
15.	02.01.220	Pharmacotherapy-IV	2				2

16.	02.01.268	Case Studies in Pharmacotherapy-IV: "Case-based seminars"		2			1
17.	02.01.222	Pharmacotherapy-V	2				2
18.	02.01.269	Case Studies in Pharmacotherapy-V: "Case-based seminars"		2			1
19.	02.04.276	Medication Safety and Health Information Technology	2				2
20.	02.01.221	Clerkship-I				3 (300 hrs)	3
21.	02.01.225	Clerkship-II				3 (300 hrs)	3
22.	02.01.226	Practical-based Research Project	1				
Total credit hours			37				

E. Distribution of Courses according to Semesters							
#	Course Code	Level 1 / Semester 1	Credit hours				Total Credit Hours
		Course Name	Theoretical	Seminar	Practical	Training	
1	06.11.205	Islamic Culture	2				2
2	06.11.203	English Language 1	2				2
3	06.11.201	Arabic language 1	2				2
4	03.01.209	Human Biology	2		2		3
5	04.01.217	Fundamentals of Nursing			2		1
6	05.02.224	Fundamentals of Health Management	2				2
7	02.04.243	General Chemistry	2		2		3
8	06.11.208	Medical Physics	2		2		3
9	06.11.206	National culture	2				2
Total			16		8		20
Total of Credit Hours			20				

#	Course Code	Level 1 / Semester 2	Credit Hours				Total
		Course Name	Theoretical	Seminar	Practical	Training	
1	06.11.204	English Language II	2				2
2	04.01.218	Medical Terminology	2				2
3	01.01.201	Human Anatomy	2		2		3
4	01.01.202	Histology	2		2		3
5	05.03.221	Computer Skills	2		2		3
6	06.11.202	Arabic Language 2	2				2
7	06.11.207	The Arab Israeli Conflict	2				2
8	05.01.220	Communication skills	2				2
9	02.01.275	Introduction to Pharmacy	1				1
Total			17		6		20
Total of Credit Hours			20				

#	Course Code	Level 2 / Semester 1	Credit Hours				Total
		Course Name	Theoretical	Seminar	Practical	Training	
1	01.01.203	Human Physiology-I	2				2
2	02.02.227	Physical Pharmacy	2		2		3
3	02.04.244	Pharmaceutical Organic Chemistry-I	2		2		3
4	03.01.207	Biochemistry-I	2				2
5	02.04.246	Pharmaceutical Analytical Chemistry	2		2		3
6	02.04.249	Pharmacognosy-I	2		2		3
7	02.02.228	Pharmaceutical Calculations	1				1
8	05.02.222	Medical statistics	2				2
Total			15		8		19
Total of Credit Hours			19				

#	Course Code	Level 2 / Semester 2	Credit Hours				Total
		Course Name	Theoretical	Seminar	Practical	Training	
1	01.01.206	Human Physiology II	2				2
2	02.02.229	Pharmaceutics-I	2		2		3
3	02.04.245	Pharmaceutical Organic Chemistry-II	2		2		3
4	03.01.213	Biochemistry-II	2				2
5	02.04.252	Pharmacognosy-II	2		2		3
6	02.03.236	Pharmacology-I	2				2
Total			12		6		15
Total of Credit Hours			15				

#	Course Code	Level 3 / Semester 1	Credit Hours				Total
		Course Name	Theoretical	Seminar	Practical	Training	
1	03.02.210	Basic Microbiology	2		2		3
2	02.04.253	Phytochemistry	2		2		3
3	02.04.248	Medicinal Chemistry-I	2		2		3
4	02.02.231	Pharmaceutics-II	2		2		3
5	02.03.237	Pharmacology-II	2		2		3
6	01.02.204	Public Health	2				2
Total			12		10		17
Total of Credit Hours			17				

#	Course Code	Level 3 / Semester 2	Credit Hours				Total
		Course Name	Theoretical	Seminar	Practical	Training	

1	02.03.238	Pharmacology-III	2		2		3
2	02.02.234	Pharmaceutics-III	2		2		3
3	02.04.250	Medicinal Chemistry II	2		2		3
4	03.02.211	Immunology	2				2
5	03.04.212	Parasitology	2		2		3
6	01.01.205	General Pathology	2		2		3
Total			12		10		17
Total of Credit Hours			17				

#	Course Code	Level 4 / Semester 1	Credit Hours				Total
		Course Name	Theoretical	Seminar	Practical	Training	
1	02.03.239	Pharmacology-IV	2				2
2	05.01.219	Pharmacy Management	1				1
3	03.01.215	Clinical Biochemistry-I	2				2
4	02.01.212	Pharmacotherapy-I	2				2
5	02.01.265	Case Studies in Pharmacotherapy-I: "case-based seminars"		2			1
6	02.01.217	Pharmaceutical Care- I		2			1
7	02.01.270	Pharmacogenomics	2	2			3
8	02.04.274	Medicinal Chemistry-III	3				3
9	05.02.223	Research Methodology	2				2
10	02.01.214	Biopharmaceutics & Pharmacokinetics	2				2
Total			16	6			19
Total of Credit Hours			19				

#	Course Code	Level 4 / Semester 2	Credit Hours				Total
		Course Name	Theoretical	Seminar	Practical	Training	
1	02.01.223	Clinical Pharmacokinetics	2		2		3
2	02.01.211	Clinical Nutrition	2				2
3	03.01.216	Clinical Biochemistry 2	2				2
4	02.01.216	Community Pharmacy	2				2
5	02.01.215	Pharmacotherapy-II	2				2
6	02.01.266	Case Studies in Pharmacotherapy-II: "case-based seminars"		2			1
7	02.01.271	Pharmaceutical Care-II		2			1
8	02.01.274	Community Pharmacy Clerkship*				3	3
9	02.04.251	Pharmaceutical Instrumental Analysis	2		2		3
Total			12	4	4		19
Total of Credit Hours			19				

*300 hours (contact hours) training in a community pharmacy



#	Course Code	Level 5 / Semester 1	Credit Hours				Total
		Course Name	Theoretical	Seminar	Practical	Training	
1	02.01.218	Pharmacotherapy-III	2				2
2	02.01.267	Case Studies in Pharmacotherapy-III: "case-based seminars"		2			1
3	02.02.233	Pharmacoeconomics and Health Outcomes	2				2
4	02.02.232	Drug Information and Evidence-Based Practice	1				1
5	02.03.242	Clinical Toxicology	2				2
6	02.03.241	Pharmaceutical Biotechnology	2				2
7	02.02.235	Pharmaceutical Marketing & Drug Promotion	2				2
8	02.01.213	Hospital Pharmacy	2				2
9	02.01.221	Clekship-I**				3 (300 hrs)	3
Total			13	2		3	17
Total of Credit Hours			17				

#	Course Code	Level 5 / Semester 2	Credit Hours				Total
		Course Name	Theoretical	Seminar	Practical	Training	
1	02.01.220	Pharmacotherapy-IV	2				2
2	02.01.268	Case Studies in Pharmacotherapy-IV: "Case-based seminars"		2			1
3	02.01.222	Pharmacotherapy-V	2				2
4	02.01.269	Case Studies in Pharmacotherapy-V: "case-based seminars"		2			1
5	02.04.276	Medication Safety and Health Information Technology	2				2
6	05.02.224	Pharmacy law & Legalization	2				2
7	02.01.273	Complementary and alternative medicine				3	3
8	02.01.225	Clerkship-II**				3 (300 hrs)	3
9	02.01.226	Practical-based Research Project	1				
Total			8	4		7	17
Total of Credit Hours			17				

** : Hospital wards rotations: 300 hrs for each clerkship

F. Distribution of Total Credit Hours (180 CH)

Level	Term	University Requirements		Faculty Requirements		Department Requirements		Program Requirements		Program Electives		Training		Total CH		Total CH/Level
		No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	No. of Courses	Credit Hours	
First	First	4	8	4	11	1	1	-	-	-	-	-	-	9	20	40
	Second	4	8	2	3	3	9			-	-	-	-	9	20	
Second	First	-	-	1	2	7	17			-	-	-	-	8	19	34
	Second	-	-	-	-	6	15			-	-	-	-	6	15	
Third	First	-	-	-	-	6	17			-	-	-	-	6	17	34
	Second	-	-	-	-	6	17			-	-	-	-	6	17	
Fourth	First	-	-	1	2	5	11	4	6	-	-	-	-	10	19	38
	Second	-	-	-	-	2	9	7	9	-	-	-	-	9	19	
Fifth	First	-	-	-	-	3	6	5	8	-	-		3	8	17	34
	Second	-	-	-	-	2	4	4	6	-	-	2*	7	8	17	
Total		8	16	8	19	41	106	20	27	-	-	2	6	82	174	180
Percentage		9.2%		10.9%		61%		15.5 %		-		3.4%		100%		

*: Graduation Research Project

10. Teaching and Learning Strategies.

A. Teaching Tools.

- Active Lectures (supported with discussion),
- Group learning and Problem-based learning,
- Seminars, journal clubs and workshops,
- Practical classes,
- Field training,
- Simulated software program
- Field visits to industries,
- Computer and web-based learning,
- Use of communication and information technology,
- Project work,
- Directed self-study.

B. Assessment Tools.

- Short essays,
- Written assessments, such as multiple-choice questions (MCQs),
- Faculty assessment by structured observation through checklists and rating scales,
- Seminar assessment,
- Multi-source assessments, such as student self-assessment,
- Simulations, such as computer-based clinical scenarios,
- summative practical assessments,
- Graduate project.
- laboratory and other written reports,
- Work samples, such as, logbooks and portfolios.

A. Teaching Strategies:

It includes description of teaching strategies to achieve learning outcomes of the program (lecture, seminar, laboratory, groups, etc. with description of how to use them and average of each of in every course

Teaching Strategy	Description of how it will be used
Lectures	It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-100) or in sessions, which consist of more than one group gathered in one classroom.
Seminars	These are mainly used with small groups of students in which they find better chances for discussing and negotiating the different concerns of their studies.
Lab experiments	Students doing practices in medical labs individually or in small groups.
Training	This is a practical kind of course where the students are required to plan and execute some field visits to hospitals, corporations or institutions where the process of clinical pharmacy is essential.
Discussion	This is done by allowing the students to ask questions during the lecture and respond to them by the lecturer or other students for the purpose of establishing and clarify the subject of the lecture strongly and increase the concentration and absorption of the student and the attention and not to enter the boredom.
Presentations	Helps the students to be more confident with themselves and make them to show the others what knowledge they have acquired. It can be followed in many types of courses and tasks.
Self-learning	Self-learning is the process by which learners teach themselves using any materials or resources to achieve clear goals without the direct help of the teacher
Case study	Case studies are defined as the scientific documentation of a single clinical observation which is so important study design in advancing medical scientific knowledge especially of rare disease .
Office Hours	Office hours are hours determined by the faculty member (professor of the course) to which the student studies. The hours allocated by the professor to meet with his students to help them and answer their queries in the event of any questions they may not be enough time for the lecture to answer it.
Case Studies	The case study is defined as an in-depth descriptive presentation of a particular position or model for the purposes of educational research or for training and education purposes.

B. Assessment Strategies:

Assessment Strategy	Its description (in which course it will be used and in which rate)
Written examinations	Mid-term test is conducted between 6 th to 8 th Class and final exam is conducted at the end of each course.
Oral exams	For selected courses
Technical or practical reports /Presentations	As indicated in the course specification

Assignments including problem-solving exercises	The entire assignments including problem-solving exercises of coursework activities during the teaching period of each course. (which includes group and individual work, tests and presentations, etc.)
Individual and group project work	As indicated in the course specification
Quizzes	For all courses except for project
Home work	For all courses except for project

C. Project Assessment: Each project will be assessed by a committee of three members as follows:

Items	Marks Distribution
Project supervisor	70 %
Internal examiner: a member of the department teaching staff.	15 %
External examiner: a qualified external examiner (either from other departments of the college or from another university)	15%
Total	100%

11. Alignment of Program Intended Learning Outcomes (PILOs) to Teaching Strategies and Assessment Methods:

(A) Alignment of Program Intended Learning Outcomes (Knowledge and Understanding) to Teaching Strategies and Assessment Methods:

PILOs	Teaching Strategies	Assessment Methods
A1, A2, A3, A4, A5	○ Lectures. ○ Exercises in lectures and seminars ○ Presentations and discussions in class	○ Written examinations ○ Quizzes ○ Home work ○ Assignments

(B) Alignment of Program Intended Learning Outcomes (Intellectual Skills) to Teaching Strategies and Assessment Methods.

PILOs	Teaching Strategies	Assessment Methods
B1, B2, B3, B4	○ Tutorials ○ Exercises in lectures and seminars ○ Group work and problem-solving learning. ○ presentations and discussions in class ○ Brainstorming	○ Written examinations ○ Technical or practical reports /Presentations ○ Assignments including problem-solving exercises ○ Individual and group project work ○ Quizzes ○ Individual and group project work ○ Home work

(C) Alignment of Program Intended Learning Outcomes (Professional and Practical Skills) to Teaching Strategies and Assessment Methods.

PILOs	Teaching Strategies	Assessment Methods
C1, C2, C3	○ Guided individual reading. ○ Group work and problem-solving learning. ○ Tutorials/ seminars. ○ Presentations and discussions in class	○ Written examinations ○ Technical or practical reports /Presentations ○ Assignments including problem-solving exercises ○ Individual and group project work ○ Quizzes ○ Individual and group project work

(D) Alignment of Program Intended Learning Outcomes (Transferable Skills) to Teaching Strategies and Assessment Methods.

PILOs	Teaching Strategies	Assessment Methods
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D1, D2, D3	○ Guided individual reading. ○ Group work and problem-solving learning. ○ Tutorials/ seminars. ○ Presentations and discussions in class	○ Written examinations ○ Technical or practical reports /Presentations ○ Assignments including problem-solving exercises ○ Individual and group project work ○ Quizzes ○ Individual and group project work
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12. Admission Requirements:

1. Admissions to the program shall be made as per the University admission guidelines and admission rules set by the Ministry of Higher Education and Scientific Research
2. General Secondary school certificate (Science Section) or any equivalent certificate with grade as specified in the admission rules made by Ministry of Higher Education and Scientific Research.
3. Pass the admission test and personal interview.
4. Any necessary requirement for specialization, decided by the Scientific Section.

13. Attendance requirements and graduation

1. Student attendance should not be less than 75% in each course.
2. Student will graduate after successfully passing all program requirements.
3. Total credit hours for the program is 174 credit hours.
4. Minimum score for any student to pass any credit hours course is 50% degree.

14. Grading System

From 90% to 100% from total marks	Excellent
From 80% to less than 90%	Very Good
From 65% to less than 80%	Good
From 50% to less than 65%	Pass
Less than 50%	Poor/Fail

15. Facilities required for running the program

Sources of learning:

1. Lecture rooms with facilities
2. Labs with facilities
3. Training in different hospital departments
4. Library study room and electronic library (books as write in each course specification)
5. Internet and professional information access

16. Appendix :

Annex (1) :

Academic Standards Curriculum Criteria of Accreditation Board

Annex (2) :

Survey of names Similar Accredited Programs at International Universities for Clinical Pharmacy Program-Faculty of Clinical Pharmacy

Annex (3) :

Survey of Intended Learning Outcomes for Similar Accredited Programs at International Universities.

Annex (4) :

Survey of Credit Hours of Similar Programs

Annex (5) :

Survey of Course Names of Similar Program

Annex (6)

Alignment of Program Objectives with Program Intended Learning Outcomes for Clinical Pharmacy Program

Annex (7) :

Alignment of Program Intended Learning Outcomes of Clinical Pharmacy Program with NARS

Annex (8) :

Themes and their Weightage with Program Intended Learning Outcomes (PILOs)

Annex (9) :

Coding System

Annex (10) :

Matrix of mapping program Clinical Pharmacy ILO's with courses

Appendix (11) :

Alignment of Program Mission and Objectives with Vision, Mission and Objectives of Department, Faculty and University and similar programs
