

Academic Program Description Form

University Name: Al-Ayen Iraqi University

Faculty/Institute: Pharmacy.

Scientific Department: College of Pharmacy

Academic or Professional Program Name: Bachelor of Pharmacy

Final Certificate Name: Bachelor of Pharmaceutical Sciences

Academic System: Semester

Description Preparation Date: 2024-09-1

File Completion Date: 2024-09-1

Signature:

Head of Department Name:

Hassan Khalaf ulaiwi

Date: 2024-09-1

Signature: Ahmed

Scientific Associate Name:

Ahmad Mohammed Salahuddin

Date: 2024-09-1

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Ameera Ameen Abdul Latif

Date: 2024-09-1

Signature:



Approval of the Dean

Signature: Hassan Khalaf Ulaiwi

1. Program Vision

Leadership and excellence in preparing qualified pharmacists with essential knowledge, skills, advanced training, professional competence, and ethical practice to improve patient care and enhance community services locally and globally.

2. Program Mission

Preparing highly skilled and competitive pharmacists through high-quality pharmaceutical education, an academic environment, and training that promotes professionalism, teamwork, innovation, and research excellence, to contribute to sustainable societal development and keep pace with the needs of the labor market.

3. Program Objectives

1. Preparing qualified pharmacists to work in the pharmaceutical and healthcare fields locally and globally.
2. Equip students with essential knowledge, a commitment to lifelong learning, professional competence, teamwork skills, and ethical values.
3. Developing high-quality educational standards and academic environment.
4. Effective community engagement to improve patient care and enhance public health awareness.
5. Continuously update curricula and training programs to align with the healthcare sector and labor market needs.
6. Promote applied research addressing the community healthcare challenges.
7. Build collaborations with local and global institutions to support the college's goals and advanced pharmaceutical education and practice.

4. Program Accreditation

National accreditation/National Council for Accreditation of Pharmacy Colleges is in progress

5. Other external influences

Practice sites– Office research – extracurricular activities – volunteer activities – other

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	10	5.5	Basic
College Requirements	55	169	94.4	Basic
Department Requirements	/	/	/	/
Summer Training		Satisfied		
Other	/	/	/	/

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			Theoretical	Practical
Year 1, 1st semester	PH1102	Principle of pharmacy	2	–
	PH1103	Analytical chemistry	3	2
	PH1104	Medical terminology	1	–
	PH1105	Mathematics and biostatistics	3	–

	PH1101	Human Biology	2	2
		Human Rights + Democracy	2	–
		English language	2	–
Year 1, 2nd semester	PH1202	Pharmaceutical calculation	2	2
	PH1201	Human anatomy	1	2
	PH1203	Medical physics	2	2
	PHH1204	Organic Chemistry I	3	2
	PH1205	Histology	2	2
		Computer sciences	1	2
Year 2, 1st semester	PH2103	Physical pharmacy 1	3	2
	PH2101	Organic chemistry II	3	2
	PH2102	Microbiology I	3	2
	PH2104	Physiology I	3	2
	PH2106	Computer sciences	–	2
		Crimes of Baath system	2	–
Year 2, 2nd semester	PH2203	Physical pharmacy 2	3	2
	PH2201	Organic chemistry III	2	2
	PH2202	Microbiology II	3	2
	PH2205	Pharmacognosy I	3	2
		Computer	–	2
		Arabic language	2	–
	PH2204	Physiology II	3	2
Year 3, 1st semester	PH3103	Pharmaceutical technology 1	3	2
	PH3105	Pathophysiology	3	2

	PH3101	inorganic pharmaceutical chemistry I	2	2
	PH3102	pharmacognosy II	2	2
	PH3104	Biochemistry I	3	2
Year 3, 2nd semester	PH3203	Pharmaceutical technology II	3	2
	PH3201	Organic Pharmaceutical Chemistry I	3	2
	PH3202	Pharmacology I	3	–
	PH3204	biochemistry II	3	2
	PH3205	Pharmacognosy III	2	2
	PH4203	Pharmacy ethics	1	–
Year 4, 1st semester	PH4104	Biopharmaceutics	2	2
	PH4101	Pharmacology II	3	2
	PH4102	Organic Pharmaceutical Chemistry II	3	2
	PH4206	Clinical Pharmacy I	2	2
	PH4105	Public health	2	–
Year 4, 2nd semester	PH4205	Industrial pharmacy 1	3	2
	PH4201	pharmacology III	2	–
	PH4202	Organic Pharmaceutical Chemistry III	3	2
	PH4103	Clinical pharmacy II	2	2
	PH4204	General toxicology	2	2

	PH3206	Communication skills	2	–
Year 5, 1st semester	PH5102	Industrial pharmacy 2	3	2
	PH5107	Graduation Project	1	–
	PH5103	Applied therapeutics I	3	–
	PH5104	Clinical chemistry	3	2
	PH5105	Training of clinical laboratories	–	4
	PH5107	Clinical toxicology	2	2
	PH5101	Organic Pharmaceutical Chemistry IV	2	–
Year 5, 2nd semester	PH5206	Dosage form design	2	–
	PH5204	Advanced pharmaceutical analysis	3	2
	PH5205	Hospital training	–	4
	PH5206	Therapeutic drug monitoring (TDM)	2	2
	PH5201	Pharmacoeconomics	2	–
	PH5202	Applied therapeutics II	2	–
	PH5207	Pharmaceutical biotechnology	1	–

8. Expected learning outcomes of the program

A) Knowledge

1. Graduates will have the ability to integrate knowledge from basic, applied pharmaceutical and clinical sciences to standardize materials, formulate and manufacture products and deliver to Population and patient-centered care	1.1 Graduates will have the ability to understand knowledge of pharmaceutical, biomedical, social, behavioral, administrative, and clinical sciences. 1.2 Integrate the pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, adverse drug reactions and drug interactions. 1.3 Correlate signs and symptoms, etiology, pathophysiology, epidemiology, laboratory diagnosis, and clinical features of infections/diseases and their pharmacotherapeutics. 1.4 The study of physiology encompasses the functional mechanisms of various organ systems, including the nervous, cardiovascular, respiratory, renal, and muscular systems. This involves understanding cellular processes, biochemical interactions, and regulatory pathways that maintain homeostasis. 1.5 The study of physiology extends to the endocrine and reproductive systems, skeletal physiology, digestive processes, and blood function. The endocrine system regulates metabolic and developmental processes through hormonal signaling, while the reproductive system ensures species continuity. Skeletal physiology involves bone remodeling and mineral homeostasis, the digestive system facilitates nutrient absorption and energy balance, and blood physiology supports immune defense, oxygen transport, and hemostasis. 1.6 The study of physiology enables students understanding the functions and mechanisms of the human body, providing a fundamental understanding of
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	how organ systems interact to maintain homeostasis. This knowledge is essential for advancing medical science, diagnosing diseases, and developing treatments, as it bridges the gap between basic biological principles and clinical applications.
2. Students in the Clinical Laboratory Sciences program gain comprehensive knowledge in laboratory techniques, disease diagnosis, and the interpretation of clinical data. This foundation prepares them to contribute effectively to patient care and medical research.	2.1. Enabling students to acquire and understand sciences related to disease, tissues, anatomy, and microscopic chemistry. 2.2. Enabling the student to understand the basis of biochemistry and microbiology. 2.3. Enable the student to follow developments in techniques used in clinical chemistry. 2.4. Enabling the student to have good knowledge in the fields of laboratory analysis. 2.5. The student acquires the knowledge and skills required to work on diagnosing diseases through laboratory tests.
3. Equip students with a comprehensive knowledge of medical terminology, pharmaceutical care, pharmacotherapy principles, ethical standards, therapeutic drug monitoring, Pharmacoeconomics, and evidence-based practices to optimize patient	3.1 Acquiring comprehensive knowledge of pharmaceutical care concepts, including the pathophysiology, symptoms, treatment options (doses and administration), therapeutic outcome evaluation, and the development of evidence-based treatment plans for acute and chronic diseases taking into account patient history, disease state, and therapeutic goals. 3.2 Scientific preparation of the student with regard to medical and scientific terminology related to his pharmacy program for the purpose of preparing a student capable of dealing with all medical terminology used in practice.

outcomes, ensure safe and effective medication use, and address the diverse needs of community in a dynamic healthcare environment	3.3 Apply evidence-based guidelines and current research to guide treatment decisions and adapt to advancements in medical practices. 3.4 Enable students to Communicate effectively with patients, healthcare providers, and medical teams during all stages of pharmaceutical care. 3.5 Enable students to educate patients about the safe and effective use of medications, including adherence to prescribed treatments and addressing potential barriers. 3.6 Develop an understanding of pharmacovigilance and therapeutic drug monitoring (TDM) to enhance patient safety and optimize therapeutic outcomes. 3.7 Develop an understanding of Pharmacoeconomics principles to evaluate costs and outcomes of medications and pharmaceutical care services. 3.8 Understand and apply ethical principles, such as autonomy, beneficence, and confidentiality, to resolve ethical dilemmas in pharmaceutical practice. 3.9 Promote individualized treatment plans tailored to patients' specific needs, considering factors such as age, lifestyle, and comorbidities. 3.10 Acquire knowledge of public health and common disease affecting it 3.11 students will develop a comprehensive understanding of public health principles, including disease prevention, epidemiology, health promotion strategies, and the role of pharmacists in community health, enabling them to contribute to public health initiatives, vaccination programs, and patient education to improve population health outcomes.
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	3.12 Students will gain a deep understanding of the social determinants of health, healthcare policies, and the impact of environmental and behavioral factors on disease prevention and management, equipping them with the ability to design and implement public health interventions, promote health literacy, and support community-based healthcare programs. 3.13 Students will acquire foundational knowledge of pharmacoeconomic principles, cost-effectiveness analysis, healthcare resource allocation, and economic evaluation of drug therapies, enabling them to make evidence-based decisions to optimize healthcare expenditures while ensuring accessibility and affordability of medications for patients and healthcare systems. 3.14 Students will develop expertise in analyzing drug cost-effectiveness, budget impact, and healthcare economic evaluations, allowing them to assess pharmaceutical policies, optimize medication-related expenditures, and contribute to sustainable healthcare financing and resource utilization.
4. Statement of the knowledge and basic principles in chemistry, Learning using different scientific techniques for synthesis, analysis and how to deal with organic and inorganic chemical	4.1 Knowledge of the methods used in the preparation of organic compounds. 4.2 Enhancing students' ability to think and analyze effectively. 4.3. Understanding the fundamental concepts of different inorganic pharmaceutical chemistry and uses of different inorganic pharmaceutical compounds 4.4. Explain the principles and applications of UV-Visible

compounds and their reactions	spectroscopy, IR spectroscopy, HNMR, mass spectroscopy, and elemental analysis in pharmaceutical analysis. 4.5 Describe the theoretical background and operational aspects of each analytical technique 4.6 How to identify the chemical compounds of drugs through pharmaceutical analyses 4.7 How to identify and classify medicines 4.8 How to name organic compounds and understand different types of organic reaction
5. Identify and understand proper abbreviations of prescription, dose calculation and basic knowledge of physical pharmacy. Moreover, understanding the formulation and evaluation of different dosage forms and the fundamental pharmacokinetics and biopharmaceutics required, in addition to understanding basics knowledge in industrial pharmacy and pharmaceutical biotechnology	5.1. Enable students to understand the components of the typical prescription, the system of different units and understand tools for measuring weights and volumes 5.2. Enable students to study calculation of drug doses and understand how to reduce and enlarge prescriptions. Moreover, identifying regulation laws on drugs, FDA, pharmacopeia in addition how to design a dosage form and the process for approval of new drug 5.3 Enable students to identify states of matter and to understand law of thermodynamics, properties of liquid and gaseous state, properties of electrolytes and nonelectrolyte solutions and explaining the equations used 5.4 Enable students to understand Ionic equilibrium, Acid–base theory and the required equation, moreover, Enable students to identify the isotonicity, buffer and buffer capacity and to understand different type of buffer.

	5.5 Enable students to understand the degree of solubility and factors affecting solubility, dissolution rate and to study the phenomenon of distribution. In addition, understand the rate of reactions and the effect of temperature and other factors on the speed of the reaction and determination of half-life and shelf life 5.6. Enable students to study the degree of viscosity of fluid, surface tension and diffusion. Moreover, to understand the dispersed systems and their classifications included colloidal solutions and their properties. 5.7. Enable students to define and understand the pharmaceutical solution, its types (such as aqueous, nonaqueous or hydroalcoholic solutions) and the method of preparation and clarification and the factors affecting filtration process. In addition, the definition of extraction its types and the methods of extraction 5.8. Enable students to define the pharmaceutical suspensions and emulsions and their properties and the method of predation. In addition, the factors affecting the stability of suspensions and emulsions. Moreover, Identification of physical, chemical and therapeutic incompatibilities and their causes 5.9. Enable students to study different pharmaceutical dosage forms (liquid, semisolid and solid), their design and properties, the advantages and disadvantages, the excipients used, the methods of preparation, the problems that may be associated,
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	their evaluations through quality control tests and the filling and packaging procedure. Moreover, studying factors affecting drug absorption 5.10 Enable students to understand definitions related to bio pharmacy and study the pharmacokinetics models for different routes of administration (particularly compartment models), pharmacokinetics parameter, biopharmaceutics, bioequivalence and ADME (absorption, distribution, metabolism and excretion). In addition, dose adjustment 5.11. Enable students to study the pharmaceutical preformulating and different process required during manufacturing such as sterilization, milling, mixing and drying and their equipments, methods and mechanisms. In addition of GMP (Good manufacturing practice principle) 5.12. Enable students to understand the basics of pharmaceutical biotechnology and study sterile product (parenteral dosage form) advantages and disadvantages for the alternative route of administrations with improvement of the oral route. In addition of production of insulin, vaccine and studying the ADME of protein therapy and release protein therapies from the body
6. Statement of the knowledge and basic principles in plant physiology, Learning using different scientific classification and how to	6.1 Knowledge of the methods used in the preparation of plant-based compounds. 6.2 Enhancing students' ability to think and analyze effectively. 6.3 How to identify the chemical compounds by using phytochemical studies.

deal with plant chemical compounds and their reactions.	6.4 How to identify the phytochemical components 6.5 How to name Phyto compounds 6.6 understand different types of Primary and secondary metabolites
7. Graduates will have the ability to Retrieve information from fundamental sciences to solve therapeutic problems.	7.1 Graduates will have the ability to Articulate knowledge from fundamental sciences to explain drugs' actions and evaluate their appropriateness, effectiveness, and safety in individuals and populations.
8. Fundamentals of Computing	8.1 The course introduces students to the fundamentals of computing, including the use of various hardware and software components. 8.2 There is no prerequisite knowledge in either programming or computer science. 3.3 By integrating AI into their education, pharmacy students can enhance their skills and prepare for a future where technology plays a significant role in healthcare. 8.4 Utilizing AI technologies in the health field. 8.5 understating fundamental discipline that helps in solving problems analyzing data and understanding pattern in nature and sciences moreover, understanding the principles and techniques of physics to medicine, particular in the diagnosis and treatment of diseases.
B) Skills	
1. Graduates will have the ability to handle and dispose of biologicals and synthetic/natural	1.1 Graduates will have the ability to act share professional decisions proper actions to patient's life in emerge situations including poisoning various xenobiotics, effectively work forensic fields

pharmaceutical materials/products effectively and safely with respect to relevant laws and legislations.	1.2 Graduates will have the ability to contribute in pharmaceutical research studies and clinical trials needed to authorize medicinal products 1.3 Through the study of physiological systems, students develop critical analytical skills, such as interpreting biological data, understanding regulatory mechanisms, and assessing physiological responses to various stimuli. Additionally, they gain practical skills in laboratory techniques, including measuring physiological parameters, analyzing hormonal functions, and evaluating blood components, which are essential for clinical and research applications.
2. Students in the Clinical Laboratory Sciences program develop essential skills in performing accurate laboratory tests, analyzing clinical data, and troubleshooting technical issues. Additionally, they enhance their communication, problem solving, and teamwork abilities to support effective healthcare.	2.1. Conduct practical experiments. 2.2. Enabling students to possess the skills of using scientific research tools in the academic and scientific fields. 2.3. Enabling students to acquire the skills of dialogue, discussion, listening to others and accepting their opinions. 2.4. Enabling students to acquire self-learning skills to acquire new information, skills and knowledge. Providing students with the skills of diagnosing medical errors using the results of clinical examinations.
3. Prepare students to apply advanced practical skills in pharmaceutical care, communication, ethics, and critical thinking to	3.1 Design and implement comprehensive pharmaceutical care plans tailored to the management of various diseases, ensuring optimal therapeutic outcomes.

deliver patient-centered, evidence-based healthcare solutions in diverse clinical settings.	3.2 Communicate effectively with patients and healthcare teams using professional medical terminology and counseling techniques. 3.3 Educate patients about medication use, potential side effects, and adherence strategies, ensuring clarity and overcoming communication barriers. 3.4 Accurately dispense medications and verify prescriptions to ensure safety and compliance with clinical guidelines. 3.5 Conduct therapeutic drug monitoring (TDM) and pharmacokinetic evaluations to optimize medication regimens. 3.6 Analyze and interpret clinical data to identify medication-related problems and recommend appropriate interventions. 3.7 Develop cost-effectiveness decisions to support rational, evidence-based decision-making in pharmaceutical care. 3.8 Implement ethical decision-making frameworks in real-world scenarios, balancing professional responsibilities with patient rights and safety. 3.9 Demonstrate proficiency in reading, interpreting, and dispensing medical prescriptions with accuracy and professionalism
4. Conducting practical experiments and enabling the students to use the instruments and laboratory devices.	4.1 How to deal with scientific equipment 4.2 Acquisition of skill in preparing compounds and medicines 4.3 Acquisition of skill in the use of different methods in the manufacture and preparation of medicines

	4.4 Using the literature to write a report on the data of a particular experiment. 4.5 Acquire the skill of safe handling of chemicals and glassware. 4.6 Acquire skill in implementing chemical diagnosis methods for chemical substances 4.7 Equalization of skill in preparing vehicles and medicines 4.8 developing the ability to analyze and interpret chemical data, perform quantitative and qualitative analyses, and use various analytical techniques. 4.9 Gaining proficiency in laboratory techniques, including safe handling of chemicals, preparation of solutions, and use of laboratory equipment. 4.10 Enhancing the ability to solve complex chemical problems, design experiments, and troubleshoot experimental issues. 4.11. Perform accurate and precise measurements using UV-Visible, IR, HNMR, and mass spectrometers. 4.12. Develop and validate analytical methods for the quality control of pharmaceuticals. 4.13. Communicate analytical findings effectively through written reports and presentations. 4.14. Work collaboratively in a laboratory setting to solve complex analytical problems.
5. Enable students to correctly apply pharmaceutical calculation and to prepare pharmaceutical products and	5.1. Enable students to have skilled work in laboratories and conduct scientific experiments 5.2. Enable students to have the abilities of pharmaceutical accounts including required doses of

extemporaneous compounding	drugs and to solve mathematical problems related to the course. 5.3. Enable students to read and interpret medical and pharmacy terms and symbols 5.4. Enable students to possess medication storage skills 5.5. Enable students how to prepare different dosage form and to evaluate the quality of the pharmaceutical products. 5.6. Enable students to prepare the calibration curve of drug and its pharmacokinetics parameters using different methods and equations. 5.7. Enable students to acquire the skills of writing scientific reports.
6. Conducting practical experiments and enabling the students to use the instruments and laboratory devices.	6.1 How to deal with scientific equipment 6.2 Acquisition of skill in preparing extraction methods 6.3 Acquisition of skill in the use of different methods in the primary and secondary metabolites 6.4 Using the literature to write a report on the data of a particular experiment. 6.5 Acquire the skill of safe handling of chemicals and glassware. 6.6 Acquire skill in implementing chemical diagnosis methods for chemical substances 6.7 Equalization of skill in preparing vehicles and medicines
7- Graduates will have the ability to actively share professional decisions and proper	2.1 Graduates will have the ability to Take actions to solve any identified medicine related and pharmaceutical care problems 2.2 Graduates will have the ability to express

actions to save patient's life in emergency situations including poisoning with various xenobiotics, and effectively work in forensic fields.	leadership, time management, critical thinking, problem solving, independent and team working, creativity and entrepreneurial skills 2.3 Graduates will have the ability to act share professional decisions proper actions to patient's life in emerge situations including poisoning various xenobiotics, effectively work forensic fields. 2.4. Choose the proper action to solve any identified drug-related and pharmaceutical care problems. 2.5. Retrieve knowledge from fundamental sciences to achieve management and pharmacotherapeutic strategies to resolve therapeutic problems.
8.Using a computer and AI	8.1 How to use a computer is a need. many of our students take advantage of our college's fundamental computer courses which educate them on the principles of computers and the internet's underlying technologies and skills. 8.2 How to use AI technologies in the healthcare field in a useful way.
C) Ethics	
1. Dealing with patients in accordance with pharmacy ethics through maintaining the security, safety and privacy of the patient.	
2. Developing students' sense of responsibility during the period of study and work.	
3. Enhancing the spirit of cooperation and teamwork among students	
4. Applying ethical theories, rules, guidelines and laws governing scientific conducts	

9. Teaching and Learning Strategies

- lectures included multimedia lectures

- Power Point presentation
- Practical work
- Open discussion
- Class activity
- Self-learning
- Brainstorming
- Problem solving
- Flipped learning class
- Hybrid education
- Role play
- Research project
- Cases based studies

10. Evaluation methods

- Homework and reports
- Daily and weekly exams
- Assessment of practical skills
- Mid-term and final exams
- Graduation projects

11. Faculty

Faculty Members

Academic Rank	Specialization	Special Requirements/Skills (if applicable)	Number of the teaching staff

	General	Special			Staff	Lecturer
Professor	1	3			4	0
Assistant Professor	20	9			21	8
Teacher	9	5			7	7
Assistant teacher	10	25			19	16

Professional Development

Mentoring new faculty members

- Teaching methods course
- Teaching validity course

Professional development of faculty members

Workshops, seminars and courses in:

- The methods and strategies of pharmaceutical education
- The basis for assessments and exam design
- Interactive education strategies
- Foundations and methods for updating and developing the curriculum

12. Acceptance Criterion

High school GPA and physical health as approved by the Ministry of higher Education and Scientific Research

13. The most important sources of information about the program

- The College of Pharmacy, University of Al-Ayen website, in Arabic and English
- University of Al-Ayen website
- Website of the Ministry of higher Education and Scientific Research

d) University of Al-Ayen College of Pharmacy page on social networking sites

14. Program Development Plan

- Increase the use of technology in the lecture room
- Promote scientific research and induction
- Foster scientific skill development
- Implementation objective structured clinical exam (OSCE) for all clinical pharmacy courses and related course
- Incorporate Active Learning Strategies
- Expand the use of technology in education
- Foster Research and Inquiry
- Develop Practical Skills
- Encourage Interdisciplinary Collaboration
- Professional Development for Faculty

Program Skills Outline																						
			Required program Learning outcomes																			
Year/ Level	Course Code	Course Name	Knowledge								Skills								Ethics			
			A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4
Year 1, First semester	PH1101	Human Biology		√								√								√		
	PH1102	Principles of pharmacy practice					√								√				√	√		
	PH1103	Analytical chemistry				√								√						√		√
	PH1104	Medical terminology			√								√						√	√	√	
	PH1105	Mathematics and biostatistics								√									√	√		
		Human Rights + Democracy																		√	√	√

Program Skills Outline																						
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Year/ Level	Course Code	Course Name	Knowledge								Skills								Ethics			
			A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4
Year 1, second semester	PH1201	Human anatomy		√								√								√		
	PH1202	Pharmaceutical calculations					√								√				√	√		
	PH1203	Medical physics								√									√	√		
	PHH1204	Organic Chemistry I				√								√						√		√
	PH1205	Histology		√								√								√		
	PH1206	Computers								√								√	√	√		
		Crimes of Baath system																		√		√

Program Skills Outline																							
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Year/ Level	Course Code	Course Name	Knowledge								Skills								Ethics				
			A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4	
year 2, first semester	PH2101	organic chemistry II				√								√						√		√	
	PH2102	medical microbiology I		√									√							√			
	PH2103	physical pharmacy I					√								√				√	√			
	PH2105	Computer sciences								√								√	√	√			
	PH2104	Physiology I	√									√							√				

Program Skills Outline																							
Required program Learning outcomes																							
Year/ Level	Course Code	Course Name	Knowledge									Skills								Ethics			
			A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4	
year 2 , second semester	PH2201	Organic Chemistry III				√								√						√		√	
	PH2202	medical microbiology II		√								√								√			
	PH2203	physical pharmacy II					√								√					√			
	PH2204	physiology II	√								√								√				
	PH2205	pharmacognosy I						√								√			√	√			
	PH2206	Computer sciences								√									√	√			

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Year/ Level	Course Code	Course Name	Knowledge								Skills								Ethics			
			A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4
year3 , First semester	PH3101	inorganic pharmaceutical chemistry				√								√								√
	PH3102	pharmacognosy II						√								√			√	√		
	PH3103	pharmaceutical technology I					√								√				√	√	√	
	PH3104	biochemistry I		√								√								√		
	PH3105	pathophysiology		√								√								√		

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Year/ Level	Course Code	Course Name	Knowledge								Skills								Ethics			
			A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4
year 3, Second semester	PH3201	organic pharmaceutical chemistry I				√								√					√	√		
	PH3202	Pharmacology I	√								√								√	√		
	PH3203	pharmaceutical technology II					√								√				√	√	√	
	PH3204	biochemistry II		√								√								√		
	PH3205	pharmacognosy III						√								√			√	√		
	PH4203	pharmacy ethics			√								√						√	√	√	

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year 4, First semester	PH4101	pharmacology II	√						√		√						√		√	√			
	PH4102	organic pharmaceutical chemistry II				√							√						√		√		
	PH4206	clinical pharmacy I			√								√					√	√	√			
	PH4104	biopharmaceutics					√							√				√	√				
	PH4105	public health			√								√					√	√	√			

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			A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4
Year 4, Second semester	PH4201	pharmacology III	√						√		√						√		√	√		
	PH4202	organic pharmaceutical chemistry III				√								√						√		√
	PH4103	clinical pharmacy II			√								√						√	√	√	
	PH4204	general toxicology	√						√		√						√		√	√		
	PH4205	industrial pharmacy I					√								√				√	√		
	PH3206	communication skills			√								√						√	√	√	

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			A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4
Year 5, First semester	PH5101	organic pharmaceutical chemistry IV				√								√					√	√		
	PH5102	industrial pharmacy II					√								√							
	PH5103	applied therapeutics I			√								√						√	√	√	
	PH5104	clinical chemistry		√								√								√		
	PH5105	clinical laboratory training		√								√								√		
	PH5107	clinical toxicology	√						√		√						√		√	√		
	PH5107	graduation projects	√		√		√				√		√		√				√	√	√	

Program Skills Outline																							
			Required program Learning outcomes																				
Year/ Level	Course Code	Course Name	Knowledge								Skills								Ethics				
			A1	A2	A3	A4	A5	A6	A7	A8	B1	B2	B3	B4	B5	B6	B7	B8	C1	C2	C3	C4	
Year 5, Second semester	PH5201	pharmacoeconomic			√								√						√	√	√		
	PH5202	applied therapeutics II			√								√						√	√	√		
	PH5206	therapeutic drug monitoring			√								√						√	√	√		
	PH5204	advanced pharmaceutical analysis				√								√					√	√		√	
	PH5205	hospital training			√								√						√	√	√		
	PH5206	dosage form design					√																
	PH5207	pharmaceutical biotechnology					√								√								

Please tick the boxes corresponding to the individual program learning outcomes under evaluation