



YEMEN UNIVERSITY

Faculty of Medical sciences

Department of pharmacy

2015



PHARMACY BACHELOR PROGRAM SPECIFICATION

1. Basic information on the program

Program name & scientific degree awarded	Pharmacy Bachelor
The entity awarding the degree	Medical sciences college
The academic department responsible for the program	Pharmacy department
Other departments participating in the program	Medical sciences faculty (Medical laboratory dept., applied medical sciences dept.), Computer sciences & IT faculty (Computer sciences dept.,)
Language of the study	ENGLISH
The year of beginning the program	2015
Study order	Obligatory attendance (minimum 75 %)
Facility of program execution	The university
Study system	Semester type - Credit hours
Study duration	5 academic years consisting of 10 academic semesters
The profession for which the program prepares the students	Pharmacy
The levels intended for qualifications	High school students
Qualification required for admission	High school certificate
Required Qualification Score %	70 %
Other conditions	Date of High school degree does not exceed 5 years.
Program Coordinator	Ala`a M. Almaqtari and Anes Abdulwahid M. Thabit

2. Faculty mission and aims

MISSION

The faculty mission is to offer to its students a remarkable high education service in medical sciences that concerns with students` acquiring of scientific knowledge and skills that potentiate their capabilities to compete in work markets and make them a qualified medical staff able to lead and develop in medical work fields and creative and effective elements in their societies. The faculty also intends to contribute in progress of the medical scientific researches and to fulfill the community need to medical services.

AIMS

1. Rising & development of the medical high education and improvement of its outcomes .
2. Achieving superiority in academic , instructional and learning aspects of its



Bachelor & postgraduate programs .
3. Enhancing of the effectiveness of its teaching staff to augment the students` learning.
4. Potentiating the students` personal, social and academic development and their technological innovation to provide the community with capable medical staff able to offer high medical services.
5. Providing a safe, health and stable educational environment that encourages learning and creation in the college`s students and teaching staff.
6. Participation in accomplishing newer scientific additions for humanity knowledge in medical fields by supporting the scientific researches for the favor of the local, regional and international communities.
7. Augmentation of the relationship with the local, Arabic and international scientific institutions to improve the health states and solving the communities problems by supporting researches and providing consultation services.
8. Supporting the loyalty of the faculty`s graduates and also its academic and administrative staff.
9. Encouraging the graduates' compliance to professional ethics and their commitment to their communities.
10. Best utilizing of its material and human resources for the favor of the learning and instructional processes in order to achieve its mission and objectives.
3. Mission & Aims of the academic department
PHARMACY DEPARTMENT
MISSION
Pharmacy department intends to offer to its students a remarkable high education service in pharmaceutical sciences that concerns with students` acquiring of scientific knowledge and skills that potentiate their capabilities to compete in work markets and make them a qualified medical staff able to lead and develop in pharmacy-related work fields and creative and effective elements in their societies. The college also intends to contribute in progress of the pharmaceutical researches and to fulfill the community need to pharmaceutical services.
OBJECTIVES
1. Rising & development of pharmacy high education and improvement of its outcomes .
2. Achieving superiority in academic , instructional and learning aspects of its Bachelor & postgraduate pharmacy programs
3. Enhancement of the effectiveness of its teaching staff to augment the students` learning.



4. Potentiating of the students` personal, social and academic development and their technological innovation to provide the community with capable pharmacists able to offer high pharmaceutical services.
5. Providing a safe, health and stable educational environment that encourages learning and creation in the college`s students and teaching staff.
6. Participation in accomplishing newer scientific additions for humanity knowledge in pharmacy by supporting the scientific researches for the favor of the local, regional and international communities.
7. Augmentation of the relationship with the local, Arabic and international pharmaceutical institutions to improve medications and solving the communities problems by supporting researches and providing consultation services.
8. Supporting the loyalty of the graduates and its academic and staff.
9. Encouragement of the graduates' compliance to pharmacy professional ethics and their commitment to their communities.

4. Program`s mission

The program intends to offer remarkable curriculum in pharmacy characterized with modernity and comprehension and focusing on development of both the knowledge and skill aspects of students in order to ensure graduation of highly qualified pharmacists who are able to provide high pharmaceutical services to their communities.

5. Program AIMS

1. Providing the students with scientific knowledge in basic sciences and pharmaceutical sciences including the modern ones that are essential to realize their duties and activities as pharmacists.
2. Developing the intellectual, professional and practical skills of the students to make them able to perform all types of pharmacy-related works.
3. Enhancing the transferable skills of the students to perform pharmacy profession with respect to their colleagues, patients and community and in compliance to the profession ethics and laws.

6. Program References

- Regulations provided by the council of quality assurance and academic accreditation – Ministry of High education & scientific research, Yemen.
- Standards of the Accreditation Council for Pharmacy Education (ACPE), 2013
- Similar Pharmacy BC programs awarded by regional and international universities and have been accredited by ACPE, including :
 - Sana'a university, Yemen
 - King Saud university, Saudi Arabia



- Qatar University, Qatar
- Beirut University, Lebanon
- Pharma Alberta university , USA

7. Intended learning outcomes (ILOs) of the program

Basic Intended learning outcomes (ILOs)

At the end of this program, the graduates shall have been able to :

ILOs of knowledge & understanding	Recognize the scientific principles and technologies needed for practicing of pharmacy profession.
ILOs of intellectual skills	Analyze, apply, synthesize and evaluate information and concepts in various pharmacy –related works.
ILOs of practical & professional skills	Practice pharmacy-related works safely and effectively.
ILOs of transferable skills	Influence positively in team work and consider ethics & laws during practicing of his/her profession& commit to serve patients & community

8. Curriculum Map

Subsidiary Intended learning outcomes (ILOs)

ILOs of knowledge & understanding

- A1.** Understand the current missions, duties and carriers of pharmacists as professionals and the related pharmaceutical sciences and the historical progress of the profession.
- A2.** Know the structures and biological processes& functions of different parts in living organisms including those in human body& sources/causes & mechanisms of diseases.
- A3.** Understand the sources of matters (including drugs), their physicochemical, pharmaceutical, biological (therapeutic and toxicological) properties and how they interact with other matters.
- A4.** Recognize the basis of drug therapy (designing and monitoring) and its cost-effectiveness and the alternative therapy methods.
- A5.** Understand the, basic, modern and advanced pharmacy work principles and technologies applied for dosage forms formulation, analyzing drugs, understanding drug effects, searching for new drugs , applying new therapies and designing drug delivery systems.
- A6.** Understand the basics and rules of speech, reading and writing in the healthcare fields.

ILOs of intellectual skills

- B1.** Use various logic mental processes such as calculation, explanation, description, conclusion, and others in dealing with various phenomena/problems related to pharmacy works.
- B2.** Compare, differentiate and distinguish between related entities, phenomena and concepts and classify various entities based on certain properties.



B3. Bind phenomena, laws or equations to their affecting factors. In addition, how these change by enhancing or inhibiting of such factors.
B4. Determine the source of errors/problems and work to solve them.
ILOs of practical & professional skills
C1. Handle, operate & run different tools, instruments and equipments involved in pharmacy works in drug plants, research & development centers, quality control departments and hospital, clinical and community pharmacies.
C2. Apply theoretical knowledge in performing different types of pharmacy works.
C3. Commit to standard operation procedures (SOPs) and safety criteria during practicing pharmacy works in Laboratories, hospitals, pharmacies and drug factories.
C4. Effectively & correctly use language grammars & fundamental skills (reading, writing and speech) , and the media and information sources (books, internet websites, computer programs) to present thoughts/ideas and to search for information
ILOs of Transferable skills
D1. Share successfully in teamwork & reporting activities.
D2. Show respect to life and commit to community serving.
D3. Communicate effectively with his/her colleagues, members of health care team, patients and other people.
D4. Comply to pharmacy laws and ethics and behave in discipline during practicing pharmacy works



No	Courses (ordered as appeared in the study plane)	Subsidiary ILOs																	
		A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
1.	Arabic language														√			√	
2.	English language 1						√		√						√			√	
3.	Introduction of computer sciences											√			√				
4.	Islamic culture																√		√
5.	Introduction to pharmacy history	√				√			√										
6.	General Biology		√						√			√		√		√	√	√	√
7.	General chemistry			√				√		√		√		√		√		√	√
8.	Pharmaceutical Organic chemistry 1		√												√	√		√	
9.	Pharmaceutical Organic chemistry 2			√				√		√		√		√		√		√	√
10.	Biophysics Physical pharmacy							√	√		√								
11.	Pharmaceutical analytical chemistry 1						√		√	√					√			√	√
12.	Medical terminology			√				√	√	√	√	√		√		√			
13.	Human Anatomy		√						√	√	√	√		√		√	√	√	√
14.	Public health and First aid	√		√		√													
15.	Human Histology		√	√		√		√	√	√	√	√		√		√		√	√
16.	Pharmaceutical Biochemistry 1								√								√		√
17.	Human Physiology I		√	√				√	√								√		
18.	General Pharmacognosy 1			√				√	√	√	√	√		√		√		√	√
19.	Pharmaceutics 1		√	√					√	√		√		√			√	√	√
20.	Pharmaceutical Organic chemistry 2		√	√				√				√		√		√	√	√	√
21.	Pharmaceutical analytical chemistry 2	√						√			√			√		√			
22.	Pharmaceutical Biochemistry 2		√	√				√	√								√		
23.	Human Physiology 2	√		√		√		√	√	√	√	√		√		√		√	√
24.	Pharmaceutics 2			√		√		√	√		√	√		√		√	√		
25.	General Pharmacognosy 2	√	√	√		√		√	√			√		√		√	√	√	√
26.	Instrumental analysis		√	√		√			√	√	√	√		√		√	√	√	√
27.	Pharmaceutical microbiology 1		√	√				√	√								√		
28.	Pharmaceutical			√		√		√	√	√	√			√		√		√	√



No	Courses (ordered as appeared in the study plane)	Subsidiary ILOs																	
		A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
	microbiology 2																		
29.	Pharmacology 1	√	√	√	√	√		√	√	√							√		
30.	Bonty and medicinal plants			√		√		√	√	√	√			√			√	√	√
31.	Pharmaceutics 3	√		√		√		√	√	√	√	√		√		√		√	√
32.	Phytochemistry 1		√	√		√			√	√	√	√		√		√	√	√	√
33.	Pharmacology 2	√	√	√	√	√		√	√	√							√		
34.	Pathology	√	√	√		√		√	√			√		√		√	√	√	√
35.	Pharmaceutical Medicinal chemistry 1		√	√				√	√								√		
36.	Pharmaceutical Quality control	√		√		√		√	√	√	√	√		√		√		√	√
37.	Biopharmacy&pharmac okinetics 1	√		√		√		√	√			√		√		√		√	√
38.	Parasitology	√	√	√	√	√		√	√	√							√		
39.	Biopharmacy&Pharmac okinetics 2	√		√		√		√	√	√	√	√		√		√		√	√
40.	Phytochemistry 2	√	√	√	√				√	√	√						√		
41.	Pharmaceutical biotechnology	√	√	√	√	√		√	√	√	√	√		√		√	√	√	√
42.	Industrial pharmacy 1	√	√	√	√	√		√	√	√	√	√		√	√	√	√	√	√
43.	Industrial pharmacy 2	√	√	√	√	√		√	√	√	√	√		√	√	√	√	√	√
44.	Pharmaceutical Medicinal chemistry 3	√	√	√	√	√		√	√	√	√	√	√	√	√	√		√	√
45.	Pharmacology 4	√	√		√			√	√		√						√	√	√
46.	Pharmaceutical Medicinal chemistry 2	√	√	√	√	√			√	√	√	√		√		√	√	√	√
47.	Toxicology & forensic medicine	√	√		√			√	√		√				√	√	√	√	√
48.	Clinical biochemistry	√	√	√	√	√		√	√	√	√	√		√		√		√	√
49.	Applied pharmacognosy 1	√	√		√			√	√		√				√	√	√	√	√
50.	Community Pharmacy& pharmacy practice	√		√	√	√		√	√	√	√	√		√		√	√		√
51.	Field training 1	√	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√
52.	Applied pharmacognosy 2	√	√	√	√	√		√	√	√	√						√		√
53.	Pharmacology 3	√	√	√		√		√	√	√	√	√		√		√	√	√	√
54.	Scienc & technology of cosmetic production	√	√	√	√	√		√	√								√		√
55.	Psycho-sociology for health professional	√		√	√	√		√	√		√	√	√	√		√	√	√	√



No	Courses (ordered as appeared in the study plane)	Subsidiary ILOs																	
		A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
56.	Advanced molecular biology	√		√	√	√		√	√			√		√		√	√	√	√
57.	Professional & Hospital pharmacy	√		√		√		√	√	√	√	√		√		√	√	√	√
58.	Field training 2	√	√	√	√	√		√	√		√				√	√	√	√	√
59.	Pharmaceutical Medicinal chemistry 4	√	√	√	√	√		√	√	√	√	√		√		√	√		√
60.	Biostatistics & Research methodology techniques	√	√	√	√	√		√	√		√				√	√	√	√	√
61.	Clinical pharmacy 2	√	√	√	√	√		√	√		√	√	√	√		√	√	√	√
62.	Pharmaceutical Biochemistry 3		√		√			√	√		√						√		
63.	Pharmaceutics 4	√	√	√	√	√		√	√	√	√	√	√	√		√	√	√	√
64.	Management of drug side effect	√	√	√	√	√		√	√	√	√						√		
65.	Community medicine	√	√	√	√	√		√	√	√							√	√	
66.	Pharmacy Law and Ethics	√			√			√	√									√	
67.	Drug marketing & advertisement	√						√	√		√	√	√	√	√	√	√	√	√
68.	Clinical pharmacy 1	√	√	√	√			√	√	√	√	√	√	√	√	√	√	√	√
69.	Graduation Research							√	√		√	√	√	√	√	√		√	√
70.	Advanced Medical terminology							√	√		√	√	√	√	√	√		√	√
71.	English language 2						√	√	√		√	√	√	√	√	√		√	√
72.	Pharmaceutical business administration		√	√	√	√		√	√	√						√	√	√	



9. Teaching strategies

Teaching strategy	How to be used?
<p>Lecture It is the most frequently employed teaching method to convey knowledge and explain theories to students in large groups (50-200) or in sessions, which consist of more than one group gathered in one classroom.</p> <p>The efficiency of lecturing can be enhanced by using techniques such as Brain-storming: It depends on stimulation of the student's brain through a group of questions &/or Concepts map: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations & by using learning aids such as Data show projector</p>	<p>This is the most frequently employed teaching method in the program. It is to convey knowledge and explain theories to students. The efficiency of lecturing should be enhanced by using techniques such as Brain-storming: It depends on stimulation of the student's brain through a group of questions or Concepts mapping: which depends on sequencing of thoughts in the form of maps with horizontal or vertical relations and other techniques or by using learning aids such as Data show projector, Intelligent board and models</p>
<p>lecture - Discussion: a short lecture/ address followed by discussion</p>	<p>one of the widely spread method of interactive studying. The process of discussion raises the quality of participation and activity of students. This process isn't limited only to questions asked by professor. This method develops the ability of conformation ones' own idea and discussion</p>
<p>Seminars: these are mainly used with small groups of students (20-30) students in which they find better chances for discussing and participating in the teaching process.</p>	<p>Presentation of some topics in pharmaceutical sciences using Data show projector and power point program</p>
<p>IT laboratory sessions: average number of students in session(20-30) students</p>	<p>During the process of study and especially during laboratory lessons student is making technology processes independently by using appropriate</p>
<p>Laboratory practice: students doing experiments in labs individually or in small groups</p>	<p>Experimental Lab. For all pharmaceutical sciences</p>
<p>Group projects: students work on a project in groups of 2 to 3 students. Important for learning by doing ,using the results in practical manner &for promoting team work skills</p>	<p>Used during pharmaceutical sciences studies and "Graduation research " courses.</p>
<p>Field training: each 2-3 students are commissioned to do certain assignments in a real field entity such as drug factory, hospitals, pharmacies under supervision of both the field principle and an academic supervisor</p>	<p>Pharmaceutical training (576 total actual training hours in 24 weeks) practically 6 months which equal 144 total credit hours..</p> <p>Training must be done in pharmacies of private and governmental hospitals, pharmacies, pharmaceutical industrial companies and accepted by the college. During the training period, students are supervised and evaluated</p>



	by the college staff members in collaboration with the pharmacy supervisor. B. Pharm. Sc. Degree will be awarded only after acceptance of the student report and evaluation.
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10. Students Assessment strategies

Assessment Rules

- No students is allowed to enter the final exam unless he/she has attended at least 75 % of the total number of course lectures/practical sessions.
- For courses that involve practical parts, the student will not pass the course unless he/she passes both theoretical and practical course parties
- The student will not pass the course unless he/she gain theoretical and practical course parties
- The minimum pass degree in the final theoretical exam is 30 % of the estimation weight of the exam.
- The minimum pass degree in the final practical exam is 30 % of the estimation weight of the exam.
- The student will pass the course if he/she gains at least 50 % of the total the estimation weight of the course.

Assessment Methods

Description of methods

Assessment method	Description & courses
Written exam	<ul style="list-style-type: none"> Will be used in most courses Closed-book pattern
Oral exam	<ul style="list-style-type: none"> Will be used in courses involving practical parts e.g. "General chemistry" Will be used in used in " Pharmacy training " courses where a specialized committee will implement the exam
Assignments	<ul style="list-style-type: none"> The student will be assigned to do homework paper, search, charts etc related to the course topics Used in most courses
Quiz	<ul style="list-style-type: none"> A predefined timed brief questions will be asked to be answered by the students
Attendance	<ul style="list-style-type: none"> Will be used in all courses Students will be informed that no one will attend the final exams unless he/she attends at least 75 % of the lectures and lab. practices (if any) Attendance degree will be based on the number of the lectures / lab. sections the student has attended.
Reporting	<ul style="list-style-type: none"> Will be used in courses including practical parts and also courses related to filed training



Attitude	<ul style="list-style-type: none"> A predefined template will be asked to filled by the student Will be used in courses including practical parts and also courses related to filed training Teachers of the lab. practice will instruct students of to follow standard procedures for safety lab works. Teachers will also inform students that they will evaluate their lab. attitude.
Pharmacy training Exams	<ul style="list-style-type: none"> 40 % of the course degree will be based on attendance, attitude and reporting and implanted by the training supervisor 60 % of the course degree will be based on oral exam implemented by specialized committee.
Graduation research project exam	<ul style="list-style-type: none"> 40 % of the course degree will be implanted for each student by the project supervisor based on attendance and attitude 60 % of the course degree will be implanted by a specialized committee for the whole students of the project based on research methodology, writing, presentation and discussion

More details of assessment method

1.For courses involving no practical part

Item	Weight	Schedule
Attendance	5%	15 th week
Assignments and Quizzes	15 %	5 th and 12 th week
Mid-term exam (Writing)	20%	7 th or 8 th week
Final-exam (Writing)	60 %	16 th -17 th week
Total Weight of the Course	100 %	

2.For courses involving a theoretical and practical parts

Theoretical part

Item	Weight	Schedule
Attendance	5 %	15 th week
Assignments and Quizzes	5 %	5 th and 12 th week
Mid-term exam (Writing)	10 %	7 th or 8 th week
Final-exam (Writing)	40 %	16 th -17 th week
Total Theory. Weight	60 %	

Practical part

Item	Weight	Schedule
Attendance	5 %	11 th week
Lab. Attitude	5 %	Weekly ; average
Reporting	5 %	Weekly; average
Final exam (theory or oral)	5 %	11 th week
Final exam (practical)	20 %	11 th week
Total Practical Weight	40 %	* : of the weight of the exam
Total Weight of the Course	100 %	

3. Pharmacy training assessment



Items	Weight
Attendance	10 %
Attitude	10 %
Reporting	20 %
Final exam by committee*: Writing & Oral exam	60 %
Total	100
* : A committee of three of the teaching staff including the teacher supervisor of the training.	
4. Graduation project assessment	
Each project will be assessed by a committee of three member as follows	
Items	Weight
Project supervisor	70 %
Internal examiner : a member of the department teaching stuff.	15 %
external examiner : a qualified external examiner (either from other departments of the college or from another university)	15 %
Total	100
Assessment of the project by the project supervisor	
Items	Weight
Attendance	50 %
Attitude and collaboration	50%
Total	100 %
Assessment of the project by the other discussion member¹	
Items	Weight
Research methodology	30 %
Research writing	30 %
Presentation	25 %
Discussion	15 %
Total	100 %²
¹ : The whole students team of the projects will be assessed as one	
² : to be converted to 15% for each examiner.	
Seminar Courses assessment	
Items	Weight
Seminar	40 %
Final written exam	60 %
Total	100
The seminar weight will be assessed (for the students group as one unit) as follows:	
Items	Weight
Presentation	10 %
Solving of the Case study questions	20 %
Discussion	10 %
Total	40 %



Description of grades			
Table of grades description			
Grade percentage %		Description	
90 – 100 %		Excellent	
80- 90 %		Very Good	
65- 80 %		Good	
50 –65 %		Pass	
<ul style="list-style-type: none">Grade percentage with fractions greater than or equal 0.5 will be raised directly to the higher gradeThe Table of grades description is used to describe course grade, semester grades , annual grades and overall grade			
Semester Grades %			
<ul style="list-style-type: none">Credit Course grade = courses grade percentage x credit hours of the courseSemester grade % = cumulative credit courses degrees in the semester / total credit hours of the semester courses			
Annual Grades %			
Annual grade % = cumulative credit courses grades in the two semesters of the year / total credit hours of courses in the two semesters of the year.			
Overall Grade %			
Overall grade = cumulative credit courses grades in the five years / 172 Where, 172 is the total credit hours of courses in the five years of the study			
Credit academic Hours			
Academic year	Credit hours		Annual Total
	First semester	Second semester	
	Total	Total	
1 st	15	16	31
2 nd	19	18	37
3 rd	16	14	30
4 th	18	19	37
5 th	19	18	37
Total	88	85	172



11. Study system & Courses			
Study Type and duration		Semester-based ; 5 academic years (levels), 10 academic semesters ; each semester is composed of 16 weeks (including exams periods).	
Total credit hours to accomplish the study		172	
Distribution of the total study credit hours			
Requirements		Number of courses and credit hours and %	
University requirement		5 courses ; 10 credit hours	
Faculty requirements		10 courses ; 24 credit hours	
Academic department requirements (essential requirements)		15 courses ; 34 credit hours	
Academic department requirements (General Obligatory Specialty requirements)		40 courses ; 100 credit hours	
Academic department requirements (Field training)		2 courses ; 4 credit hours	
Academic department requirements (optional Specialty requirements)		None	
Total		72 courses ; 172 credit hours	
Courses Per Requirement			
1. Courses required by the university			
No.	Code	Course	Credit hours
1.		Arabic language	2
2.		English language 1	2
3.		English language 2	2
4.		Introduction of computer sciences	2
5.		Islamic culture	2
Total			10
2. Courses required by the faculty			
No.	Code	Course	Credit hours
1.		General Biology	2
2.		General chemistry	3
3.		Pharmaceutical Organic chemistry 1	3



4.		Pharmaceutical Organic chemistry 2	3
5.		Pharmaceutical Organic chemistry 3	3
6.		Medical terminology	2
7.		Public health and First aid	2
8.		Biostatistics & Research methods & techniques	2
9.		Graduation Research	2
10.		Advanced Medical terminology	2
Total			24
3. Courses required by the Department			
a. Essential required courses			
No.	Code	Course	Credits hours
1.		Introduction to pharmacy history	2
2.		Community medicine	2
3.		Pharmacy Law and Ethics	2
4.		Pharmaceutical analytical chemistry 1	3
5.		Pharmaceutical analytical chemistry 2	3
6.		Biophysics & Physical pharmacy	2
7.		Human Anatomy	3
8.		Human Histology	2
9.		Human Physiology 1	2
10.		Human Physiology 2	2
11.		Bonty and medicinal plants	2
12.		Advanced molecular biology	2
13.		Psycho-sociology for health professional	2
14.		Pathology	2
15.		Parasitology	3
Total			34
Specialty courses (obligatory & field training)			
Pharmaceutics and Pharmacy practice courses			



No.	Code	Course	Credits hours
1.		Pharmaceutics 1	3
2.		Pharmaceutics 2	3
3.		Pharmaceutics 3	3
4.		Pharmaceutics 4	3
5.		Biopharmaceutics & Pharmacokinetics 1	2
6.		Biopharmaceutics & Pharmacokinetics 2	2
7.		Pharmaceutical biotechnology	2
8.		Industrial pharmacy 1	2
9.		Industrial pharmacy 2	2
10.		Pharmaceutical Quality control	2
11.		Pharmaceutical microbiology 1	3
12.		Pharmaceutical microbiology 2	3
13.		Drug marketing and advertisement	2
Total			32
Pharmaceutical chemistry and related courses			
14.		Pharmaceutical Medicinal chemistry 1	3
15.		Pharmaceutical Medicinal chemistry 2	3
16.		Pharmaceutical Medicinal chemistry 3	3
17.		Pharmaceutical Medicinal chemistry 4	3
18.		Instrumental analysis	2
19.		Pharmaceutical business administration	2
20.		Pharmaceutical Biochemistry 1	3
21.		Pharmaceutical Biochemistry 2	3
22.		Science & technology of cosmetic production	2
23.		Pharmaceutical Biochemistry 3	3
Total			27
Pharmacognosy and related courses			
24.		General pharmacognosy 1	3
25.		General pharmacognosy 2	3
26.		Phytochemistry 1	3
27.		Phytochemistry 2	3



28.		Applied pharmacognosy 1	3
29.		Applied pharmacognosy 2	3
Total			18
Pharmacology and related courses			
30.		Pharmacology 1	2
31.		Pharmacology 2	2
32.		Pharmacology 3	2
33.		Pharmacology 4	2
34.		Toxicology & forensic medicine	2
Total			10
Clinical Pharmacy and Pharmacy practice courses			
35.		Management of drug side effects	2
36.		Field training 1	2
37.		Field training 2	2
38.		Clinical pharmacy 1	3
39.		Clinical pharmacy 2	3
40.		Clinical biochemistry	2
41.		Professional & hospital pharmacy	2
42.		Community Pharmacy & pharmacy practice	2
Total			18
Overall Total			172



STUDY PLAN									
FIRST YEAR									
First semester									
No	Course	Code	Courses - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Arabic language		university	2	-	-	-	2	
2	English language 1		university	2	-	-	-	2	
3	Introduction of computer sciences		university	2	-	-	-	2	
4	Medical terminology		Faculty	2	-	-	-	2	
5	Introduction to pharmacy history		Essential	2	-	-	-	2	
6	General Biology		Faculty	2	-	-	-	2	
7	General chemistry		Faculty	2	1	-	-	3	
Total				14	1	-	-	15	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING

FIRST YEAR									
Second semester									
No	Course	Code	Courses - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Pharmaceutical Organic chemistry 1		Faculty	2	1	-	-	3	
2	Islamic culture		university	2	0	-	-	2	
3	Biophysics & Physical pharmacy		Essential	2	-	-	-	2	
4	Pharmaceutical analytical chemistry 1		Essential	2	1	-	-	3	
5	Advanced Medical terminology		Faculty	2	0	-	-	2	
6	Bonty and medicinal plants		Essential	2	-	-	-	2	
7	English language 2		university	2	-	-	-	2	
Total				14	2	-	-	16	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING



SECOND YEAR									
First semester									
No	Course	Code	Courses - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Human anatomy		Essential	2	1	-	-	3	
2	Parasitology		Essential	2	1	-	-	3	
3	Human Physiology 1		Essential	2	0	-	-	2	
4	Instrumental analysis		Specialty	2	-	-	-	2	
5	Pharmaceutics 1		Specialty	2	1	-	-	3	
6	Pharmaceutical Organic chemistry 2		Faculty	2	1	-	-	3	
7	Pharmaceutical analytical chemistry 2		Essential	2	1	-	-	3	
Total				14	5	-	-	19	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING

SECOND YEAR									
Second semester									
No	Course	Code	Courses - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Pharmaceutical Biochemistry 1		Specialty	2	1	-	-	3	
2	Human Physiology 2		Essential	2	0	-	-	2	
3	Pharmaceutics 2		Specialty	2	1	-	-	3	
4	Human histology		Essential	2	-	-	-	2	
5	Pharmaceutical microbiology 1		Specialty	2	1	-	-	3	
6	Pathology		Essential	2	0	-	-	2	
7	Pharmaceutical Organic chemistry 3		Faculty	2	1	-	-	3	
Total				14	4	-	-	18	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING



THIRD YEAR									
First semester									
No	Course	Code	Courses - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Pharmaceutical microbiology 2		Specialty	2	1	-	-	3	
2	Pharmaceutics 3		Specialty	2	1	-	-	3	
3	General pharmacognosy 1		Specialty	2	1	-	-	3	
4	Pharmaceutical Biochemistry 2		Specialty	2	1	-	-	3	
5	Pharmacy law and ethics		Essential	2	-	-	-	2	
6	Community medicine		Essential	2	-	-	-	2	
Total				12	4	-	-	16	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING

THIRD YEAR									
Second semester									
No	Course	Code	Courses - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Pharmaceutics 4		Specialty	2	0	-	-	2	
2	Professional & hospital pharmacy		Specialty	2	-	-	-	2	
3	Public health & first aid		Faculty	2	0	-	-	2	
4	Pharmaceutics 3		Specialty	2	1	-	-	3	
5	Psycho-sociology for health professional		Essential	2	0	-	-	2	
6	Pharmaceutical Biochemistry 3		Specialty	2	1	-	-	3	
Total				12	2	-	-	14	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING



FOURTH YEAR									
First semester									
No	Course	Code	Coures - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Pharmaceutical Medicinal chemistry 1		Specialty	2	1	-	-	3	
2	Pharmacology 1		Specialty	2	0	-	-	2	
3	Phytochemistry 1		Specialty	2	1	-	-	3	
4	Pharmaceutical business administration		Specialty	2	0	-	-	2	
5	Clinical biochemistry		Specialty	2	0	-	-	2	
6	Biopharmacy &pharmacokinetics 1		Specialty	2	-	-	-	3	
7	Community Pharmacy &pharmacy practice		Specialty	2	0	-	-	2	
8	Advanced molecular biology		Essential	2	0	-	-	2	
Total				16	2			18	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING

FOURTH YEAR									
Second semester									
No	Course	Code	Coures - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Pharmaceutical Medicinal chemistry 2		Specialty	2	1	-	-	3	
2	Pharmacology 2		Specialty	2	0	-	-	2	
3	Phytochemistry 2		Specialty	2	1	-	-	3	
4	Clinical pharmacy 1		Specialty	2	1	-	-	3	
5	Pharmaceutical biotechnology		Specialty	2	0	-	-	2	
6	Biopharmacy &pharmacokinetics 2		Specialty	2	0	-	-	2	
7	Management of drug side effects		Specialty	2	0	-	-	2	
8	Field training 1		Specialty	0	0	-	2	2	
Total				14	3		2	19	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING



FIFTH YEAR									
First semester									
No	Course	Code	Courses - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Pharmaceutical Medicinal chemistry 3		Specialty	2	1	-	-	3	
2	Pharmacology 3		Specialty	2	0	-	-	2	
3	Science & technology of cosmetic production		Specialty	2	0	-	-	2	
4	Clinical pharmacy 2		Specialty	2	1	-	-	3	
5	Applied pharmacognosy 1		Specialty	2	1	-	-	3	
6	Toxicology & forensic medicine		Specialty	2	0	-	-	2	
7	Industrial pharmacy 1		Specialty	2	0	-	-	2	
8	Field training 2		Specialty	0	0	-	2	2	
Total				14	3		2	19	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING

FIFTH YEAR									
Second semester									
No	Course	Code	Courses - required type	Credit hours					Pre-request
				L	P	S	TR	Total	
1	Pharmacology 4		Specialty	2	0	-	-	2	
2	Applied pharmacognosy 2		Specialty	2	1	-	-	3	
3	Biostatistics & research methods & techniques		Faculty	2	0	-	-	2	
4	Industrial pharmacy 2		Specialty	2	0	-	-	2	
5	Drug marketing and Advertisement		Specialty	2	0	-	-	2	
6	Pharmaceutical quality control		Essential	2	0	-	-	2	
7	Pharmaceutical Medicinal chemistry 4		Specialty	2	1	-	-	3	
8	Graduation Research		Faculty	0	2	-	-	2	
Total				14	4		-	18	

L : THEORETICAL , P: PRACTICAL , S : SEMINAR ; TR.: TRAINING



Training Plan for PB Program (Actual 576 hrs)					
Fifth Year (9 th Semester) (8 Week) (192hrs)			Fourth Year (8 th Semester) (16 Week) (384 hrs)		
Training Hours	Course Name	Week No.	Training Hours	Course Name	Week No.
96hrs	Field Training in Pharmaceutical Products Manufacturing	1-4	96 hrs	Field Training in Governmental Pharmacies	1-4
			96hrs	Field Training in Governmental Hospital Pharmacies	5-8
			96 hrs	Field Training in Private Hospital Pharmacies	9-12
96 hrs	Field Training in Community Pharmacy & Medical Supply	5-8	96hrs	Field Training in Private Pharmacies	13-16
24	Training Total & Actual Hours/Week)		24	Training Total & Actual Hours/Week)	
4	(Training Total Credit Hours/Week)		4	(Training Total Credit Hours/Week)	

Academic year	Credit hours									
	First semester					Second semester				
	L	P	S	TR.	Total	L	P	S	TR	Total
1 st	14	2	-	-	15	14	2	-	-	16
2 nd	14	5	-	-	19	14	4	-	-	18
3 rd	12	4	-	-	16	12	2	-	-	14
4 th	16	2			18	14	3		2	19
5 th	14	3		2	19	14	4		-	18
Total	70	15	2	4	91	71	16	4	2	90



12. Admission & Registration requirements

- 1- The original certificate of secondary school graduation – scientific department- with at least 75 % overall performance grade associated with an authorial stamped copy of the certificate.

*For certificates from outside Yemen, they must be translated (if not in Arabic language) and approved by authority entities in Yemen.

- 2- Registration fees
- 3- A photocopy of personal or family identity card.
- 4- 10 frontal personal photocopies with a white background.
- 5- A copy of the first 8 pages of the passport (for non-Yemeni students)
The passport should be valid for at least one year to come.
- 6- A copy for health fitness certificate (for non-Yemeni students)

Procedure for registration

Application for admission and registration should be done at the times specified by the university. The person who desire to admit this program should do the following :

1. Review the study system, regulations and the admission requirements (he/she can get a copy from the unit of admission and registration (UAR) in the university).
2. Review the admission application papers offered by the university, fill it by him/herself, and deliver it to the (UAR) in the university.
3. Deliver all the required certificates and papers required for admission to the UAR.
4. The administration of the UAR will revise the applier delivered papers to ensure their validation.
5. The UAR inform of the applier that his/her application is accepted/rejected.
6. If the application is accepted. He/she must pay the registration fee and deliver him/her a receipt for that.

14. Requirements of attendance and program accomplishment

The followings are ONLY basic terms that regulate the study in this program. Other important terms are delivered by the UAR to those who want to admit this program.

General regulations

- The student who is regressed in this program will not be allowed to register in another program of the same faculty at the same time.

Attendance

- Attendance of the student is obligatory in this program.
- At least he/she must attend at least 75 % of the study in both parts (theoretical and practical , if any)
- The student who fails to attend 75 % of each part will not be allowed to enter the final exams and will be considered "Failed" in the course. He/she also will not be allowed to attend the complementary



exam either.

Proceeding to next levels

- The student will processing to the next level (academic year) of the study if he/she passes all the level courses.
- After performing the final exams and the complementary exams:
 - The student who has failed in two courses (in that level or in the previous levels) can proceed to the next level only if one of these courses is a university-required course.
 - The student who has failed in three courses (in that level or in the previous levels) can proceed to the next level only if one of these courses is a university-required course.
 - If the student failed in a non-practical based course, he has no need to attend that course in the next year.
 - If the student failed in a practical based course, he has to attend the whole course again (both theoretical and practical part of the course) in the next year.
 - The student who has passed a course will not be allowed to re-study that course again.

Outage and suspension of the study

The study outage

- The study outage is a state when the student stopped attending the study and has not deliver a request to suspend it. The outage period allowed is maximum of three academic years.
- The new curriculum (if any) of the program is applied to the outage student when he/she re-joins the study.

Suspension of the study

- The maximum allowed period of suspension is a maximum of two academic years or four academic semesters either consecutive or not.
- The new curriculum (if any) of the program is applied to the suspending student when he/she re-joins the study.
- The student whom wants to suspend the study must himself/herself (or a person authorized by him/her) deliver a written request to the dean of the faculty associated with a reasonable excuse for suspension.
- If the first semester has started, it is not permitted to accept requests of suspension.

Withdrawal from the study

- The student whom wants to withdraw from the study must himself/herself (or a person authorized by him/her) deliver a written request to the dean of the faculty.
- He/she must pay all financial fees of the study and must be free from demands from all related units of the university.

11. Graduation requirements

Requirement	Details
Total number of courses and credit hours required for graduation	<ul style="list-style-type: none"> • A total of 72 course of a total of 172 credit hours



Total number of actual field training hours required for graduation	<ul style="list-style-type: none"> • 576 actual training hours
Minimum grade for success in every course	<ul style="list-style-type: none"> • The minimum grade percentage is 50 %. • With conditions that the student must Attain at least 30 % of the degree of: <ul style="list-style-type: none"> ○ The final theoretical exam ○ The final practical exam ○ The committee degree for graduation pharmacy field training courses.
Minimum grade for success in the program	<ul style="list-style-type: none"> • The minimum grade percentage is 50 % and the minimal grade is (pass).

12. Resources required to execute the program

a. Learning sources

The program has the following learning sources

Learning source	Sections	Detail
White Boards	All	At least One at each classroom
Library	Office equipments	Reading tables, Computer tables, chairs , Shelves for books and periodicals
	Books and Periodicals	suitable number of books and periodicals that comprehend all courses
	Electronic Books	the library computers will be supplied with a variety number of electronic books and CDs that comprehend a lot of courses
Information technology sources	Computer desktops	(6 computers at the library and 40 at the computer lab.)
	Data show projectors	Each classroom has one
	Printers	(1) at the library , (1) at the computer lab, (1) at the photocopy services center
	Photocopy machine	(1) at the library , (1) at the photocopy services center
	Scanner	(1) at the library , (1) at the computer lab, (1) at the photocopy services center
	Flash memory cards (6 G) and CDs	Suitable amounts at the library (1) at the photocopy services center
	Internet links	(1) at the library , (1) at the computer lab
	Wireless networks	In the middle of the faculty

b. Laboratories

1. Number and names of labs

No.	Lab. Name
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1.	Pharmaceutics Lab.	
2.	Pharmacognosy & Phytochemistry Lab.	
3.	Pharmaceutical Chemistry Lab	
4.	Clinical and Biomedical Lab.	
5.	Parasitology & Microbiology Lab.	
6.	Anatomy & Histology Lab.	
7.	Virtual Pharmacy	
8.	Computer Lab.	
c. Tools & Equipments		
1. Essential tools:		
Filter papers	Test-tubes and holders	Burettes
Glass rods	Conical flasks	Funnels
Separating funnels	Calibrated flasks	Beakers
Measuring volumetric cylinders	Pipettes	Package Bottles
Microscopic slides	Washing bottles	Syringes
Spoons	Spatulas	stands
<ul style="list-style-type: none">These tools of different sizes should be available in each lab (if necessary) and in a suitable numbers as being required.		
2. Essential instruments :		
<ul style="list-style-type: none">1. Electronic balances: (appropriate number in each Lab. at least one of them reads two digits).2. Thermometers : whenever necessary and in suitable amounts3. Bunsen burners : whenever necessary and in suitable amounts4. First aid set: one in each lab.5. Safety chart of instruction: one in each lab.6. Fire extinguisher bottle: one in each lab.7. Air ventilation system : Gas and vapor suction system : whenever necessary		
3. EQUIPMENTS : the major equipments required are :		
Pharmaceutics Lab.		
No.	Tool/ equipment name	Quantity
1.	Manual capsule fillers	1



2.	Homogenizer	2
3.	Centrifuge	1
4.	Sieves	10
5.	Digital pH Meter	1
6.	Suppository Mould	3
7.	Magnetic stirrer	2
8.	Melting point apparatus	1
9.	Water bath (6holes)	1
10.	Hot plate	1
11.	Tablet hardness tester	1
12.	Desiccators	1
13.	Tablet Coating – pan	1
14.	Clarity test apparatus	1
15.	UV/visible Spectrophotometer	1
16.	Moisture analyzer	1
17.	Refrigerator	1
18.	Thermometer	2
19.	Tablet single press	1
20.	US Sonnicator	1
21.	Mortar and pestle small in size	15
22.	Mortar and pestle medium in size	25
23.	Mortar and pestle large in size	25
24.	Spoon and spatula	15



25.	Beaker's holder	15
26.	Buchner funnel (various sizes)	5
27.	Water bath (6holes)	1
28.	Magnetic stirrer	2
29.	Shaker	1
30.	Dissolution apparatus	1
31.	Disintegration apparatus	1
32.	Hardness digital tester	1
33.	Friability tester	1
Pharmacognosy & Phytochemistry Lab		
No.	Tool/ equipment name	Quantity
1.	Hot plate	1
2.	Soxhlet apparatus	2
3.	Oven	1
4.	Rotary evaporator	1
5.	Electric shaker	1
6.	Simple distillation apparatus	6
7.	Steam distillation apparatus	٦
8.	Water bath (6holes)	1
9.	TLC chamber	2
10.	Magnetic stirrer	2
11.	Microscopes	18
12.	Electric grinder big	2



13.	Porcelain dish	15
14.	U .V lamp	1
15.	Mortar and pestle small in size	5
16.	Micro pipettes	5
17.	Desiccators	1
18.	Buchner funnel (various sizes)	10
19.	Chromatography plates	30
Pharmaceutical Chemistry Lab		
No.	Tool/ equipment name	Quantity
1.	UV/visible Spectrophotometer	1
2.	Hot plate	1
3.	Oven	1
4.	Buchner funnel(various sizes)	5
5.	Water bath (6holes)	1
6.	Autoclave	1
7.	Magnetic stirrer	2
8.	Sonnicator	1
9.	PH meter	1
10.	Colorimeter	1
11.	Mortar and pestle small in size	5
12.	Micro pipettes	5
Anatomy & Histology Lab.		
No.	Tool/ equipment name	Quantity



1.	Histology teaching slides	1 box
2.	Microscopes	20
3.	Microtome	1
4.	Histokintte 2000	1
5.	Microscopes	10
6.	Porcelain dish	14
7.	Teaching slides histology	2
8.	Tissue stains different types	4
9.	Anatomy models : Hip , eye, cardiac, kidney, dental care, skull, skeleton, elbow, male/female urogenital system, joints, muscular system, Brain, nervous system, Alimentary system, bones.	1 of each
Parasitology & Microbiology Lab.		
No.	Tool/ equipment name	Quantity
1.	Bunsen burner	5
2.	Autoclave	1
3.	Microscopes	20
4.	Oven	1
5.	hot plates	2
6.	Incubator	1
7.	Water bath	2
8.	Thermometer	10
9.	pH meter	1
10.	Cupboard Storage	1
11.	Refrigerator	1



12.	Microscope with (slides, cover slips, stains, staining rack, immersion oil)	10
13.	Petri dishes	200
Clinical and Biomedical Lab. (Clinical chemistry, Biochemistry, Pharmacology, Toxicology)		
No.	Tool/ equipment name	Quantity
1.	High performance chromatography (HPLC) with UV detector	1
2.	pH meter	1
3.	Refrigerator	1
4.	Microscopes	20
5.	UV/visible Spectrophotometer	1
6.	Hot plate	3
7.	Water bath	1
8.	UV/visible Spectrophotometer	1
9.	Organ bath with drums	5
10.	ELISA	1
Virtual pharmacy		
Items		
<ul style="list-style-type: none"> Shelves of appropriate size Instructional charts for pharmaceutical calculations Empty out-packages of a lot of pharmaceutical products available in the drug market and comprehend all generic names and variety of dosage forms Table + computer desktop + electronic program of drug indexes + electronic books of drug indexes such as " Clinician drug index" A group of books of drug indexes e.g. MEPPPO, MIMS 		
Computer lab		
Items		
<ul style="list-style-type: none"> Computer desktops and appendices : 20 on appropriate table Chairs 		



- Printer : 1
- Scanner : 1
- Microsoft Offices programs and other valuable
- Internet link
- Data show
- White board

d. Chemicals & Reagents

A variety types of chemicals and reagents including : acids, alkalis, salts ,solvents , indicators, vehicles , culturing materials and others are required.

1- Sodium hydroxide	24- potassium bromide	48. magnesium sulphate
2- Sodium lauryl sulphate	25- potassium cyanide	49. manganese sulphate
3- Sodium oxalate	26- tripotassium citrate	50. magnesium tri silicate
4- Sodium format	27- potassium hydroxide	51. Ammonium sulphate
5- Sodium chloride	28- Potassium sulphate	52. Ammonium oxalate
6- Sodium borax	29- potassium thiocyanate	53. Ammonium carbonate
7- Sodium nitroprusside	30- Potassium dichromate	54. Ammonium bicarbonate
8- Sodium azide	31- potassium nitrate	55. Ammonium chloride
9- Sodium sulphite	32- potassium chloride	56. Ammonium acetate
10- Sodium nitrate	33- potassium ferricyanide	57. Aluminum sulphate
11- Sodium iodide	34- potassium iodide	58. Aluminum nitrate
12- Sodium sulphate	35- potassium chromate	59. Aluminum chloride
13- Sodium meta bisulphite	27- potassium carbonate	60. nickel sulphate
14- Sodium dodecyl sulphate	36- potassium permanganate	61. cobalt chloride
15- Sodium nitrite	37- potassium ferrocyanide	62. naphthalin
16- Sodium bicarbonate	38- ammonium thiocyanate	63. zinc sulphate
17- Sodium carbonate	39- Ammonium ferric citrate	64. zinc metal(powder)
18- Sodium sulfide	40- Ammonium ferrous sulphate	65. lead chloride
19- Tri Sodium citrate	41- Ammonium tartrate	66. lead powder
20- Sodium acetate	42. calcium hydroxide	67. lead acetate
21- Sodium bromide	43. calcium carbonate	68. mercuric chloride
22- Sodium cobalt nitrite	44. calcium sulphate	69. mercuric sulphate
23- Sodium phosphate	45. calcium acetate	70. mercuric nitrate
	46. calcium chloride	71. ferric sulphate
	47. magnesium carbonate	72. iron 3 chloride
		73. iron 2 sulphate



74. copper 2 acetate	97. alpha naphthol	119. coco nut oil
75. copper 2 sulphate	98. beta naphthol	120. hydroxyl amine hydrochloride
76. barium chloride	99. gum tragacanth	121. di phenyl amine
77. barium sulphate	100. silica gel 254	122. thyme oil
78. barium nitrate	101. sulphur	123. Sudan 3
79. E.D.T.A	102. resorcinol	124. methyl orange
80. zinc oxide	103. talc	125. bromocresol green
81. Ascorbic acid	104. acacia	126. phenol red
82. citric acid	105. bees wax	127. methyl red
83. Benzoic acid	106. calamine	128. silver nitrate
84. Tartaric acid	107. bentonite	129. Fehling's solution A&B
85. Tannic acid	108. cetostearyl alcohol	130. bromine water
86. D. sorbitol	109. kaolin	131. million's reagent
87. stearic acid	110. polyethylene glycol (liquid & solids)	132. methyl violet
88. Boric acid	111. sucrose	133. per chloric acid 70%
89. Acetyl salicylic acid	112. charcoal	134. fluorescein sodium
90. Sulphosalicylic acid	113. iodine	135. urea
91. Salicylic acid	114. lanolin	136. Chloroform
92. Oxalic acid	115. gentian violet	137. Nitric acid
93. chloral hydrate	116. oleic acid	138. N-hexane
94. phenolphthalein	117. tween 80	
95. starch	118. pure code liver oil	
96. gelatin		

13. Program Evaluation and Improvement

Evaluation Target	Evaluation period and tool	Samples
Final year students	Annual Questionnaire	50 % of the students number
Program Graduates	Every 2 years Questionnaire	50 % of the graduates number



<p>Employment entities</p>	<p>Every 3 years (Questionnaire & Meeting)</p>	<ul style="list-style-type: none"> • Supervisors of med. Representatives in a marketing Drug company. • Manager of a local drug factory. • Head pharmacist in a private hospital. • Head pharmacist in a public hospital. • Manager of the Quality control lab. in the supreme board of drugs.
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