ECU
EGYPTIAN CHINESE UNIVERSITY
الجامعة المصرية الصينية
History Creates Your Future

Faculty of Pharmacy and Drug Technology

كلية الصيدلة وتكنولوجيا الدواء

藥學與藥物技術學院

Bachelor of Pharmacy (Pharm D) Program

STUDENT GUIDEBOOK

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UNIVERSITY PRESIDENT MESSAGE

Dear ECU students,

I would like to congratulate you for choosing Egyptian Chinese University (ECU). We offer untraditional sort of education that concentrate on smart education with a great benefit of the Chinese experience in education, especially the untraditional Chinese medicine.

I am sure that you are looking to gain insight into our educational programs, outreach activities, and professional services. The academic success and well-being of our students are our priorities.

Our University provides a state-of-the-art education that puts our students on track with the best. We exert great effort to provide the best education by offering well-balanced curricula in a supportive environment and putting great emphasis on innovation in teaching and learning to gain a respectful national and international reputation. We also try hard to empower our students with the ultimate ability of lifelong learning that is urgently required in the market. Therefore, our curricula and teaching methods are continuously evolving to be relevant and enable our students to reach their full potential.

I hope that all our students will graduate from ECU as motivated and more mature personnel who are inspired by new knowledge and friendships that were gained throughout their university life.

Prof. Ashraf M. EL-Shihy

President of Egyptian Chinese University

DEAN MESSAGE

Dear ECU Pharmacy Students,

It is my immense pleasure to congratulate you for joining our family at the Faculty of Pharmacy and Drug Technology.

Our faculty offers an interactive 6-years Doctor of Pharmacy (Pharm D) program, aiming to provide a unique educational experience within the framework of the guidelines of the Supreme Council of Universities (SCU) and the National Academic Reference Standards (NARS) for higher education institutes.

Our program represents a distinguished avenue to connect each student to the needs of the labor market. It pays attention to The secrets of the herbal Chinese medicine, The exchange of students and academic staff with leading Chinese universities, The enrollment of high-caliber academic staff, teaching assistants and visiting Chinese professors, The field visits to the industrial factories and teaching hospitals, and The adoption of hybrid learning platforms that combine the advantages of face-to-face and interactive on-line learning with our Egyptian and Chinese partners. The program includes specialized courses in 7 departments, viz; Pharmaceutics, Pharmacognosy, Pharmacology and Toxicology, Biochemistry, Pharmaceutical Chemistry, Microbiology and Immunology, and Pharmacy Practice. In addition, other elective, medical, non-professional and University-requirement courses are delivered to enable students to excel in their academic endeavors and future careers.

Our commitment at Faculty of Pharmacy and Drug Technology is to develop competent pharmacists who can understand and practice what is needed for evolving from traditional medication dispensers to professional health care providers. Pharmacists should do their best towards the implementation of the "precision medicine approach*"* where tailored medications are provided to satisfy the needs of each patient.

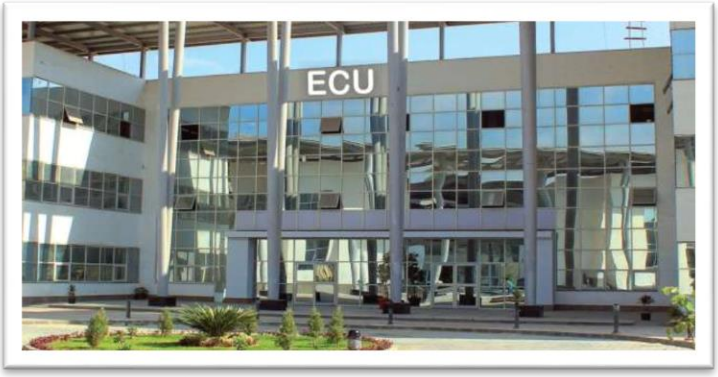
Kindly remember that "we are here for you". Your comments and suggestions are most welcomed.

Best Regards,

Prof. Mina I. Tadros

Dean of Faculty of Pharmacy and Drug Technology

Egyptian Chinese University (ECU)



Egyptian Chinese University (ECU) is the only Chinese university in Egypt and the Middle East founded by the presidential decree No. (118), 2013.

ECU contributes in the establishment of factories, workshops and technology transfer; helping to create a second row of businessmen and push youth forward for self-employment highly trained graduates. The university also includes training workshops, sales outlets for the students' products which assist in sustainable students' development, in addition to some enterprises that help the surrounding population and so, transfer the technical and practical Chinese experience. ECU is aiming to contribute to intellectual growth, discipline and good character for the future leaders in Egypt and the Middle East.

ECU introduces higher quality educational services in modern and advanced scientific fields, satisfies international strategies and supports scientific research, experimental development and innovation, as well as applying life - long - learning (LLL) plans. ECU represents an advanced model of technological and productive university, with graduates capable of competing on both national and international levels, in addition to carrying out basic and applied scientific researches leading to innovative outputs. The graduates of ECU are to be equipped with skills and professional background that are adapted to modern labor markets in the knowledge era with orientation towards the development of entrepreneurial activities. ECU represents then, a comprehensive higher educational system that strongly supports socioeconomic sustainable development. Strategies and future plans of ECU are based on multiple criteria such as: quality, accessibility, effectiveness, governance, sustainability internationalization, excellence of research and community services.

ECU holds affiliations with three renowned research universities in China, Beijing Jiao Tong University, Liaoning University and North China Electric Power University. The collaboration aims to realize Egypt’s aspirations to excel in scientific research and to upgrade the standards of innovation, creativity and community entrepreneurship in the fields of engineering, pharmaceuticals, Physiotherapy and business. It includes cooperation in designing academic and exchange programs and internship opportunities, which increase the university’s productivity in research, and its impact on economic and societal development.

Vision

Egyptian Chinese University (ECU) aims to be a technology-based productive higher education institution that is highly ranked on the national and international levels, and to be recognized as an original and modern producer of science and knowledge. ECU is a research-led university supporting innovation and entrepreneurial activities for building human capital and achieving sustainable development.

Mission

The mission of Egyptian Chinese University (ECU) is to build the student's productive personality as a productive university that copes with the increasing needs of the labor markets of the 21st century. This could be achieved through creating opportunities of exposing students to the new world economic industries, in order to acquire personal, social and professional skills and competences of the knowledge era.

Faculty of Pharmacy and Drug Technology

Faculty of Pharmacy and Drug Technology is one of the most important faculties in Egyptian Chinese University. It aims to the continuous progression in performance in the areas of pharmacy education and scientific research to support and contribute to the development of the pharmaceutical industry.

Vision

To achieve leadership in education, research and community service in all pharmaceutical domains, locally, regionally, and worldwide.

Mission

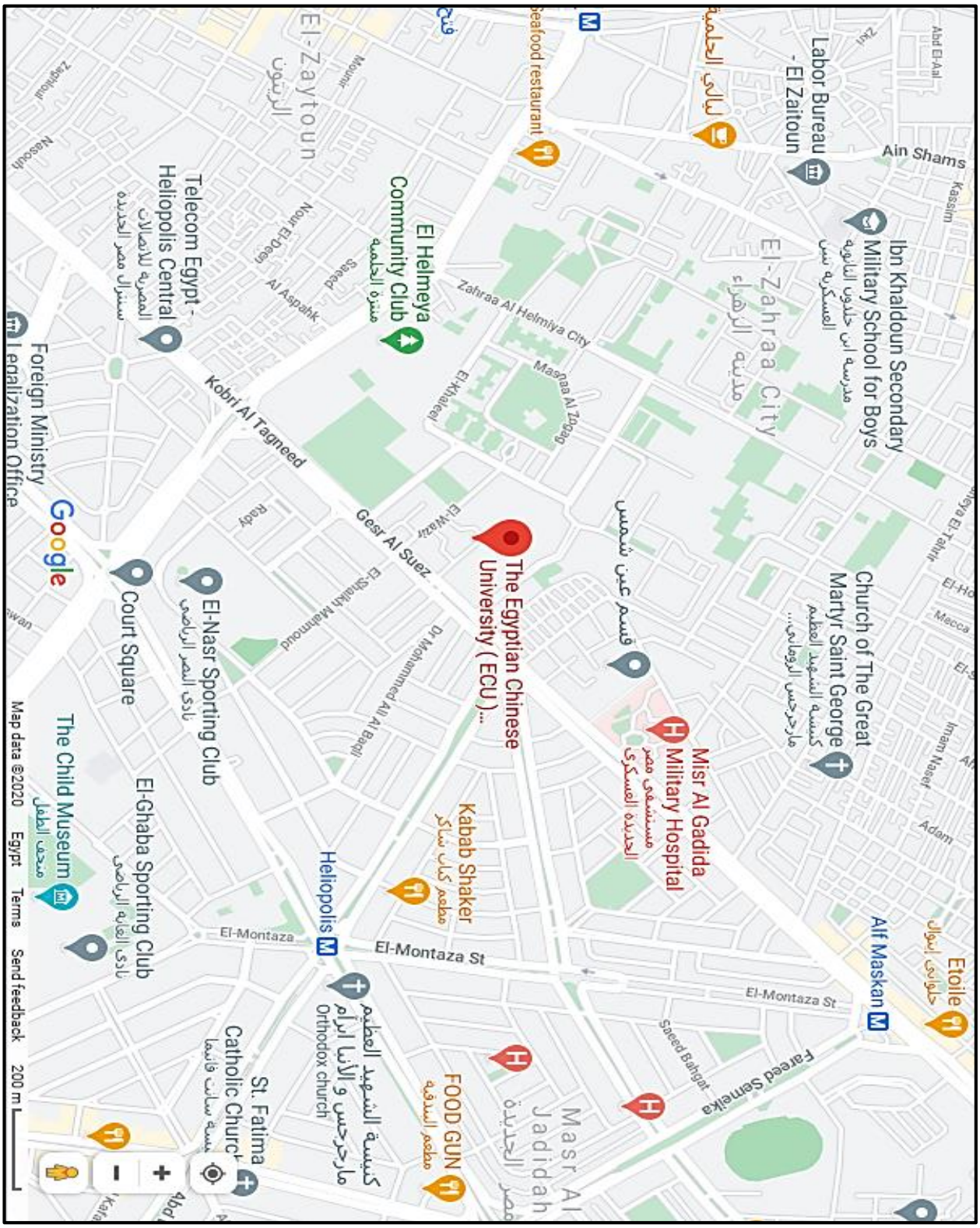
Faculty of Pharmacy and Drug Technology is committed to the upgrade and continuous development of the educational process, graduate studies, research and community service programs to graduate pharmacists privileged to meet the needs of the local and regional labor market with a competitive edge coping with the national academic reference standards and university values.

General Graduate Attributes

Faculty of Pharmacy and Drug Technology aims to graduate pharmacist who has the know-how and knowledge of different kinds of pharmaceutical formulations, whether, from natural sources (microbial, plant or animal), chemical synthesis, or genetic engineering. The faculty hopes to graduate pharmacist aware of all the requirements of the profession and equipped with the latest developments in pharmaceutical sciences needed by the pharmaceutical industries to compete with his counterparts locally and globally. In addition to being qualified to work within the medical team and perform his clinical role in the hospitals. In addition to acquiring knowledge and practical skills, the graduate is expected to acquire the skills and competencies that would allow him to conduct critical thinking, perform adequate planning, conduct responsible leadership, adhere to ethical values, get oriented towards entrepreneurship, and appreciate the need for lifelong-learning.

Faculty contact information

Website: https://www.ecu.edu.eg/pharmacy/
E-Mail: info@ecu.edu.eg
Tel: 19346
Address: Gesr ElSuez st. behind Tagneed Bridge, Cairo, Egypt.


The Egyptian Chinese University (ECU)...
Ibn Khaldoun Secondary Military School for Boys
مدرسة ابن خلدون الثانوية العسكرية بنين
Labor Bureau - El Zaitoun
Ain Shams
El-Zahraa City
مدينة الزهراء
Zahraa Al Helmiya City
El Helmeya Community Club
منتزة الحلمية
Telecom Egypt - Heliopolis Central
المصرية للاتصالات سنترال مصر الجديدة
El-Zaytoun
الزيتون
Foreign Ministry Legalization Office
Kobri Al Tagneed
Gesr Al Suez
Court Square
El-Nasr Sporting Club
نادي النصر الرياضي
El-Ghaba Sporting Club
نادي الغابة الرياضي
The Child Museum
متحف الطفل
Heliopolis
El-Montaza
El-Montaza St
Kabab Shaker
مطعم كباب شاكر
Misr Al Gadida Military Hospital
مستشفى مصر الجديدة العسكري
قسم عين شمس
Church of The Great Martyr Saint George
كنيسة الشهيد العظيم مارجرجس الرومانى...
Alf Maskan
Etoile
حلواني إيتوال
FOOD GUN
مطعم السدفه
St. Fatima Catholic Church
كنيسة سانت فاتيما
كنيسة الشهيد العظيم مارجرجس و الأنبا ابرام Orthodox church
Farreed Shenieka
Saeed Bahgat
Masr Al Jadidah
مصر الجديدة
Google
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Terms
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ADMISSION POLICY

Students who have obtained the Egyptian General Certificate or its equivalent degrees with grades equivalent to at least the minimum level for admission in faculties of pharmacy in private universities as set by the rules put by the Supreme Council for Universities and the Council of Private Universities in the year of obtaining the Egyptian General Certificate or its equivalent degrees can apply.

The applicant is informed of the date of skills, English, computer, and special exams according to what is determined by the University Council.

The applicant should pay the administrative and exams fees at least 3 days prior to the exams date.
All applicants should undergo a medical check to determine their fitness according to the health standards determined by the University Council. The exams are carried out either in accredited centers or the medical administration in the university.
Each faculty should determine its skills exams (if any).
After passing the exams, an interview date is set.
The student is informed of the acceptance of his application and the university registration fees (paid once) and the study fees for the first semester should be paid.
After paying the fees required for the Faculty of Pharmacy, the student's file is delivered to the Ministry of Higher Education, according to the stage compatible with his grades.
All finally accepted applicants are informed with the dates and procedures of registration.
Regarding applicants who failed the exam, they are informed of the results once announced.
It is allowed to accept the students who obtained the Egyptian General Certificate or its equivalent degrees in previous years (according to the decree of the Supreme Council of Private Universities) according to the aforementioned conditions

Rules for the transfer to the Faculty

Students enrolled in faculties of pharmacy in any of the public, private, or foreign universities recognized by the Supreme Council of Universities can be transferred according to the following conditions:

1. His grades in the Egyptian General Certificate or its equivalent should not be less than the minimum set for enrolling into Faculty of Pharmacy by the Supreme Council of Private Universities for the same academic year.
2. The student should pass the admission exam according to the rules set by the University Council.
3. The student should have the minimum GPA required by the ECU to accept transferred students.
4. The courses studied and passed by the transferred student to the Faculty of Pharmacy in the ECU would replace its equivalent courses. If no equivalent course is available in the ECU they can be considered among the elective courses.
5. In all cases, the transferred students will follow the graduation requirement set by the ECU.

STUDY SYSTEM

Degree awarded

The Egyptian Chinese University awards its graduate, at the recommendation of the Faculty Council after successful completion of the approved study program, the degree of "Bachelor of Pharmacy"(PharmD) according to the credit hours system. This is the first university degree in the field of pharmacy that is required to obtain work authorization to practice the jobs in different fields of pharmacy. Also, this degree qualifies the graduate to register in master's degree in any of the specialties of the Faculty departments.

Study system

The study is carried on according to the credit hours system. A “CREDIT HOUR” is the unit of measuring educational CREDIT, usually based on the number of classroom hours per week throughout a term. The length of the study in the program is five academic years (Five levels in ten academic semesters) according to the credit hours system and a year of advanced training (residency) in work places (5+1). In addition to 100 actual hours of field training in community, governmental, and hospital pharmacies during summer vacations after finishing level 3 and before the commence of the residency year.

Study language

The English language is the main language of the study in the Faculty. Some course could be studied in Arabic according to the recommendation of the specialized academic department and the approval of the Faculty Council.

Academic year and semesters

The academic year consists of the following semesters;
First semester (Fall)
Second semester (Spring)
Third semester (Summer); this is an elective semester for both the students and the Faculty i.e. the Faculty may not offer any courses during this semester and the student may not enroll in any courses during this semester.

The study during the Fall and Spring semesters is 17 weeks while in the summer semester it is 6-8 weeks of intensive study including the exams.

Study levels

Students enrolled in the Faculty are classified into study levels (One, Two, Three, Four, and Five). Each level has Fall, Spring, and Summer semesters according to the credit hours accomplished by the student.

Number of credit hours that were succeeded	Level	Student designation
Less than 35 credit hours	One	Freshman
35 to 70 credit hours	Two	Sophomore
71 to 106 credit hours	Three	Junior
107 to 142 credit hours	Four	Senior 1
143 credit hours to more	Five	Senior 2

Academic advising

Each student will have an academic advisor who oversees his academic program and follows up on his performance and helps him in solving academic problems since his enrollment till graduation.
The system of academic advising is well connected to the credit hours system and it fulfills to the student:
-Helps in choosing courses from the different disciplines.
- Prepare an educational plan according to the student's capabilities.
- Clarifies to the student his progress according to the academic plan.
- Helps the student overcome any obstacles or problems.

Academic program and important terminologies

The academic program consists of all the courses which the student should complete to be awarded the degree. Courses are divided into university requirements for the Health sector (those are not added to the cGPA of the student) and faculty requirements. The latter are divided into core courses (obligatory for all students) and elective courses, which are chosen according to the student's interests and field of work.

Academic calendar

The university prepares an annual academic calendar showing the dates of the registration, the start of the exams, and the end of the academic semester. The calendar also shows the important events taking place in the university. The academic calendar is announced in all faculties and on the university website.

Registration

Registration dates are announced in the academic calendar for either enrolled students or those still to be enrolled. The student with the help of his academic advisor fills the registration form by choosing the courses and preparing his timetable then submit it to the admission and registration administration in the university after being approved by the academic advisor. The student will be considered registered after paying the tuition fees. Each academic advisor and the admission and registration administration should keep an academic file for each student that contains all the enrollment documents, a copy of his timetable, and his semester grades.

Late registration

The academic calendar determines the dates of the start of student's registration in the courses before the start of the semester. It is allowed that the student can register in the first week of the semester after the approval of the academic advisor and the respective department council. The Faculty Council can approve the registration of the student at the end of the second week of the semester if he accepts the excuse for the delay and that is after the approval of both the academic advisor and the respective department council. In case the student submits a request to register after the beginning of the semester, late registration fees apply to the student as determined by the University Council.

Pre-requisite courses

- A pre-requisite is a course that the student should complete before he is allowed to register in a subsequent course and the following conditions apply to it:

- A student cannot study a course and its prerequisite simultaneously unless he gets a suggestion from the academic advisor, approval of the respective department council and the Faculty Council.

- A student can register in a course that he had studied its prerequisite and failed in it if his graduation is held only on this course after suggestion from the academic advisor and approval of the respective department council and the Faculty Council.

Add, drop, and withdrawal periods

Keeping into consideration the minimum and the maximum registration load the following is also considered:

1. The first week of the semester is assigned for registration and the coursework starts immediately after that.
2. The student is allowed to add and drop courses during the second week.

Drop

The student can drop a course or more in a period that does not exceed the second week of the semester while keeping the minimum registration load in the semester. In this case, the course is removed from the student's record.

Add

After the approval of the academic advisor, the student can add a course or more during the first two weeks of the semester keeping in mind the maximum registration load for the semester.

Withdrawal

The student can withdraw from the registration of a course or more after the approval of the academic advisor in a period that does not exceed the fourth week of the coursework keeping in mind the minimum registration load for the semester. In this case, these courses are not recorded in the student's record. The student can withdraw from the registration of one course or more with an excuse that is accepted by the Faculty Council after the fourth week and up to the eighth week keeping in mind the minimum registration load for the semester. In this case, these courses are recorded in the student's record and the grade will be "W" and it is not included at all in the GPA calculation.

Semester withdrawal

The student can withdraw from the semester, after the approval of the academic advisor and the Faculty Council, in a period that does not exceed the eighth week in first and second semesters and the third week of the summer semester.

The enrolled student who did not attend registration, add, and drop is considered withdrawn from the semester.

The student cannot withdraw in more than four consecutive semesters without an excuse accepted by the Faculty Council.

If the student withdrew during the first two weeks in first and second semesters or the first week of the summer semester, he does not pay the semester fees. After that period the student is required the pay the semester fees in full.

Number of hours for each course

Each of the studied courses is counted in terms of credit hours. The total number of credit hours required for graduation is distributed over the different semesters. There is flexibility in this distribution according to the students' needs and capabilities and according to the circumstances of the Faculty.

Study load

The study load is the total number of credit hours the student can register for each academic semester. The study load ranges from 12 to 21 credit hours (with an average of 18 hours) according to the study plan that is offered by the Faculty and the maximum study load in the summer semester is 9 credit hours.
The maximum load can be increased for the student who has an excuse that is accepted upon the recommendation of the academic advisor and the approval of the respective department council and the Faculty Council:
- GPA should be 3.3 or more
- The student should be at least in Level two (after the approval of the academic advisor)
- If student graduation is held for that.

The University should provide for the students an appropriate number of credit hours per semester so that they can graduate in 5 years.

Graduation requirements

First: University requirements for the health sector of 4 credit hours and Faculty requirements of 171 credit hours (Total 175 credit hours).

Second: the cumulative GPA (cGPA) for the student should not be less than "1" upon graduation.

Third: Passing the preliminary training session of 100 actual training hours in community, governmental, and hospital pharmacies that are approved by the Faculty Council under the supervision of a faculty member. This training is carried out during the summer vacations after finishing level 3. In addition to a residency year (one academic year- 9 months) after finishing the years of the academic studies according to the detailed plan of the training in the residency year including the graduation project in one of the offered disciplines.

Cumulative Grade Point Average (cGPA):

The cGPA is the calculated average of all the courses points which have been studied (either failed or passed) up to the date of calculating this average.

Points corresponding to each grade

Grade	Percentage	Points	Symbol
Excellent	More than 97%	4.0	A^+
	From 93 to less than 97%	4.0	A
	From 89 to less than 93%	3.7	A^-
Very Good	From 84 to less than 89%	3.3	B^+
	From 80 to less than 84%	3.0	B
	From 76 to less than 80%	2.7	B^-
Good	From 73 to less than 76%	2.3	C+
	From 70 to less than 73%	2.0	C
	From 67 to less than 70%	1.7	C^-
Pass	From 64 to less than 67%	1.3	D+
	From 60 to less than 64%	1.0	D
Fail	Less than 60%	0	F

GPA calculation

The GPA is calculated for each course by multiplying the points of this course by the number of its credit hours then the product is divided by a total number of credit hours that the student has registered in. The final value is approximated to two decimal digit numbers.

The following is an example of the calculation of the GPA

Example: Consider that the grades of a student in 5 courses are A, C, B, D, & B

Symbol	Points	Credit hours	Product
A	4	3	12
C	2	3	6
B	3	3	9
D	1	2	2
B	3	4	12
Total		15	41

Then, GPA = 41 / 15 = 2.73

Granting of honors (Graduation with honors)

First:

The student's name is included in the honors list if he gets a GPA not less than 3.3 while he has registered the maximum academic load without failing in any course. The student is awarded the first-degree honors if he graduates with a cGPA not less than 3.7 and the second-degree honors if he graduates with a cGPA not less than 3.3; provided that he does not get a cGPA less than 3 in any of the years.

Second:

If the student gets a cGPA of 3.5 or more, he can register an extra 3 credit hours up to the maximum academic load allowed for registration in the semester after paying extra fees.

Third:

If the GPA is less than 1, the student is put under close monitoring and gets his first "Academic Warning".

Stumbling and academic warning

The student is allowed 5 consecutive semesters or 9 non-consecutive semesters (summer semester not included) to improve his rank and gets a GPA of 1 or more. During these semesters the student is not allowed to register the maximum number of credit hours and he is allowed a decreased load according to his grade. If the student could not improve his cGPA in a maximum of 5 consecutive semesters or 9 nonconsecutive semesters (summer semester not included) he would be given a final academic warning and he will be included in the disqualified students.

The list of the disqualified

This list includes the names of the students who could not get out from the academic warning list and could not improve their GPA in the set period and without submitting an acceptable excuse to the Faculty administration. In this case, the student status is presented to the Faculty Council to make a decision regarding this student. If the student could not fulfill the requirements of the Faculty Council in this last semester, the student is dismissed from the Faculty.

Improving the grade

If the student fails in a course, he should repeat it and enter its exam again. If he passes the course after repeating it, he gets the highest of PASS grade.

Incomplete course

The student can not complete a course or more up to the last week of the semester with an excuse that is accepted by the Faculty Council and in this case, a grade of incomplete "I" is awarded in the student record. However, this should not affect his GPA. The student can complete the course in the following semester or repeat the whole course according to the Faculty Council recommendation.

Suspending enrollment

If the student did not register in an academic semester or withdrew from all courses in which he has registered, he will be considered out of school. The student can suspend his study for a maximum of three academic semesters with an excuse accepted by the Faculty Council. Suspension fees that are determined by the University Council should be paid in this case. The student is dismissed if he stayed out of school for four semesters without an excuse accepted by the Faculty Council. The student will be dismissed upon the approval of the Faculty Council and the University Council.

Retaking a course

The student can restudy a course to improve his grade in it (this is allowed for only once per course) and he can get the higher grade obtained in his GPA without a change in the fulfilled credit hours.

Student's attendance

Student's attendance is a part of the educational process. The student should attend all lectures and practical session. If his absence rate is 25% from all the hours of the course, he will get an academic warning. If the rate passed 30% without an excuse accepted by the Faculty Council, the student is deprived of entering the final exam of this course and is considered failed in this course and gets the grade (F).

Dismissal from the university

The student is dismissed from the university in the following cases:

1- If he obtains 6 academic warnings in 6 consecutive semesters or a total of 10 academic warnings.
2- If he does not finish his study in the maximum allowed period (18 semesters) 9 academic years.
3- If he is dismissed due to behavioral or ethical reasons.
4- If he is deprived of entering the final exam in all courses in two academic semesters.

The dismissed student can transfer to another faculty in the university or any other university. Students affairs administration calculates for the dismissed student the number of the credit hours he has studied in the program and a new academic record is made for him while keeping the old record too to compare the courses that may be shared with the other faculty to which the student is transferring.

Re-enrollment in the faculty

After the approval of the Faculty Council, and consulting the academic advisor, a dismissed student can be re-enrolled as a student and should attend lectures, practical and training sessions. The re-enrollment is allowed within a certain period with a maximum of three academic semesters after the student's dismissal. He should be re-examined in what he has failed in or required to improve his grade in.

The student pays the re-enrollment fees determined by the University Council until he is transferred to a regular student one more time after the reason of his dismissal has been no longer valid. The academic load for the external student who has been re-enrolled should not exceed the minimum registration load from the subjects he has failed in.

Student's evaluation in the course

The student is continuously evaluated during the semester and final grade for each course is the sum of all the grades he obtained in the periodical activities, practical, midterms and final exams. The distribution of the grades for each element is as indicated in the respective tables. The student should get at least 30% of the grade of the final exam, if he gets less, he'll be considered failed and the grades of the other elements of the course won't be added to him.

Examination procedures

The University Council determines the examinations procedures from putting the exam, correcting the answers, recording the marks and the grades, and announcing the results. The exams are held at the determined dates according to the timetable.

Absence from the exams

If the student did not attend the midterm exam with an excuse accepted by the Faculty Council according to the submitted, during a week from the exams date, documents that support his absence, the Council and whom it delegates in coordination with the department head can arrange a remake exam for the student. Any student who is absent in the final exam with an excuse accepted by the Faculty Council, his grade is modified from absent to incomplete on the condition he submits an excuse within a week of the date of the exam. The rules of completing the course with an incomplete grade should be followed with the condition the course coordinate should state that the student is serious and has fulfilled all the course requirements and did not exceed the allowed absence percentage. Upon a decision by the Faculty Council, based on a recommendation of the academic advisor, a student will have a remake exam for a final exam in a period that does not exceed three weeks from the beginning of the following semester and his grade is modified in this course according to his grade in the remake exam.

Results endorsement

The Faculty Council endorses the results of the semester exams and the University Council endorses the final exam to obtain the Bachelor's degree. The certificates are issued to the faculty graduates and signed by the dean after the endorsement of the results from the University Council.

The Academic council

The academic council is formed to take care of the coordination and of all academic aspects related to the academic program and acceptance, registration and following the educational process. The council is chaired by the President of the University and it includes the university academic consultant, the deans of the faculties, the director of the administrative and financial affairs, the head of the quality assurance center, and the director of the to the English language program. This council is concerned with looking at the affairs related to the educational process and ensuring its best performance, following the students' complaints and working on providing solutions to them in the light of the rules and regulations of the university. The students can submit their questions, requests, or complaints to the council and they should receive replies to their complaints through the offices of the deans.

Petitions

If the student wants to submit a petition from his result, he has the right to submit a request to the faculty administration, within a week from the date of the release of the results, to revise his result after paying the set fees. In this case, the faculty only re-record his grades and do not re-correct the exam to ensure that his grades were recorded correctly. The student is then informed with the result of this process. In the case of finding a substantial mistake in the 18 recording of the results, the administration of the admission and registration is informed to correct the student's record.

Graduation courses their offering and conflicts

If the graduation of the student is held on a course that is not offered in the semester he should graduate in or there is a conflict between it and an obligatory course offered in the same semester, the student can study the required course (that he studied before) by himself (self-study) under the supervision of the course coordinator after the approval of the academic advisor, the respective department council and the Faculty Council. This student will be assessed based on his attendance in all the exams and assignments given to the student who is registered in this course. This case will be only applied on the students who are repeating courses because they cannot graduate because their cGPA is less than the required cGPA for graduation.

Training

Preliminary field training:

The student must complete 100 actual hours of field training in community, governmental, and hospital pharmacies that are approved by the Faculty Council under the supervision of a faculty member. This training is carried out during the summer vacations after finishing level 3 before the commence of the residency year.

Advanced field training (Residency year)

The student should fulfill the residency year (One academic year- nine months) after finishing the academic years training in pharmaceutical companies and factories producing human and veterinary drugs. Companies and factories producing medical supplies and equipment, cosmetics, food supplements, herbs and medicinal plants, disinfectants and pesticides. Drugs distribution companies and drugs storage facilities. Local and international centers and agencies for oversight and monitoring of drugs (eg. MOH, CAPA, NODCAR,WHO, FDA, EMA..etc). Centers for pharmaceutical, medical, bioavailability, and clinical trials. In addition to public and private pharmacies and hospitals and in drug marketing. Also, for those interested in academia (teaching and research), they can spend a period in the faculties of pharmacy or research centers. The residency should include one session in clinical pharmacy practice.

Academic scholarships

The university offers scholarships to excellent students who face emergency situations according to the systems set by the University Council and endorsed by the Board of Trustees. Student's disciplinary actions In case a disciplinary action is need towards a student, the disciplinary system set out in the Law of the Egyptian Universities law number 49 (1972) and its complementary laws will be applied.

English language proficiency

The university cares that its students have a high level of English language proficiency, that is why a level determination exam is conducted for the applicants. Based on the result of this exam, students are divided into the levels and their path for studying the English language at each level as follows:

Level	Exam's result	Course to be studied
First	Less than 50%	ENG 01/ ENG 02
Second	Between 50 and 70%	ENG 02

Each course is studied for a whole semester and they are considered pass/fail courses and their marks are not added to the total score.

Study and Specialization Requirements

Obtaining a Bachelor of Pharmacy degree, requires that the student successfully pass 175 Credit Hour, distributed over 10 semesters.

These hours include university requirements and faculty requirements, as follows:

University requirements 4 credit hours.
Faculty requirements of 171 credit hours, distributed as follows:
Obligatory courses of 163 credit hours and elective courses of 8 credit hours.

Faculty Departments

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

Course codes

The faculty offers several courses so that each scientific department either teaches or oversees a group of these courses according to its specialty. Each course has a unique code that indicates the faculty, the scientific department, and the order of the course in the department.

Course code system rules

The First letter represents Faculty of Pharmacy (P), The second represents the department that will teach the course or supervise its teaching.
The first number: represents the semester number, the second and third numbers: represent the course series.

STUDY TIMETABLES

Level I: Fall semester

Semester (1)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmaceutical Analytical Chemistry I	PC 101	2	1	3	Registration	20	40	75	15	150	2
Pharmaceutical Organic Chemistry I	PC 102	2	1	3	Registration	20	40	75	15	150	2
Pharmacy Orientation	PT 101	1	-	1	Registration	10	—	40	—	50	1
Medicinal Plants	PG 101	2	1	3	Registration	20	40	75	15	150	2
Medical Terminology	MD 101	1	-	1	Registration	10	—	40	—	50	1
Information Technology	NP 101	1	1	2	Registration	15	25	60	—	100	1
Mathematics	MS 102	1	—	1	Registration	10	—	40	—	50	1
Human Rights and Fighting Corruption	NP 102	1	—	1	Registration	10	—	40	—	50	1
Profession Ethics	PU 101	1	-	1	Registration	10	—	40	—	50	1
Scientific English	PU 102	1	-	1	Registration	10	—	40	—	50	1
Total		13	4	17						850	

o *Lect.* = Lecture *Period.* = Periodical *Pract./ Tut.* = Practical / Tutorial *Wr.* = Written

Level I: Spring semester

Semester (2)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmaceutical Analytical Chemistry II	PC 203	2	1	3	Pharmaceutical Analytical Chemistry I	20	40	75	15	150	2
Pharmaceutical Organic Chemistry II	PC 204	2	1	3	Pharmaceutical Organic Chemistry-I	20	40	75	15	150	2
Cell Biology	PB 201	1	1	2	Registration	15	25	50	10	100	1
Anatomy& Histology	MD 202	2	1	3	Registration	20	40	90	-	150	2
Physical Pharmacy	PT 202	2	1	3	Registration	20	40	75	15	150	2
Pharmacognosy I	PG 202	2	1	3	Medicinal Plants	20	40	75	15	150	2
Psychology	MD 203	1	-	1	Registration	10	--	40	--	50	1
Total		12	6	18						900	

Level II: Fall semester

Semester (3)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Pharmaceutical Analytical Chemistry III	PC 305	1	1	2	Pharmaceutical Analytical Chemistry-II	15	25	50	10	100	1
Pharmaceutical Organic Chemistry III	PC 306	2	1	3	Pharmaceutical Organic Chemistry-II	20	40	75	15	150	2
Scientific Writing	NP 303	1	1	2	Registration	15	25	60	—	100	1
Pharmacognosy II	PG 303	2	1	3	Pharmacognosy-I	20	40	75	15	150	2
Physiology and Pathophysiology	MD 304	2	1	3	Registration	20	40	75	15	150	2
Pharmaceutics I	PT 303	2	1	3	Registration	20	40	75	15	150	2
Total		10	6	16						800	

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Level II: Spring semester

Semester (4)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Biochemistry I	PB 402	2	1	3	Registration	20	40	75	15	150	2
General Microbiology and Immunology	PM 401	2	1	3	Registration	20	40	75	15	150	2
Instrumental Analysis	PC 407	2	1	3	Pharmaceutical Analytical Chemistry II	20	40	75	15	150	2
Pathology	MD 405	1	1	2	Histology	15	25	50	10	100	1
Pharmaceutics II	PT 404	2	1	3	Physical Pharmacy	20	40	75	15	150	2
Communication skills	NP404	-	1	1	Registration	10	15	25	—	50	1
Biostatistics	PO 401	1	-	1	Registration	10	–	40	–	50	1
Chinese Language I	PU 403	1	-	1	Registration	10	–	40	–	50	1
Total		11	6	17						850	

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Level III: Fall semester

Semester (5)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Biochemistry II	PB 503	2	1	3	Biochemistry-I	20	40	75	15	150	2
Pharmaceutical Microbiology	PM 502	2	1	3	General Microbiology and Immunology	20	40	75	15	150	2
Phytochemistry I	PG 504	2	1	3	Registration	20	40	75	15	150	2
Pharmaceutics III	PT 505	2	1	3	Physical Pharmacy	20	40	75	15	150	2
Medicinal Chemistry I	PC 508	2	1	3	Pharmaceutical organic III	20	40	75	15	150	2
Pharmacology I	PO 502	2	1	3	Physiology & Pathophysiology	20	40	75	15	150	2
Total		12	6	18						900	

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Level III: Spring semester

Semester (6)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Parasitology and Virology	PM 603	2	1	3	Registration	20	40	75	15	150	2
Biopharmaceutics and Pharmacokinetics	PT 606	2	1	3	Pharmaceutics I	20	40	75	15	150	2
Phytochemistry II	PG 605	2	1	3	Phytochemistry-I	20	40	75	15	150	2
Pharmaceutics IV	PT 607	2	1	3	Physical Pharmacy	20	40	75	15	150	2
Pharmacology II	PO 603	2	1	3	Pharmacology-I	20	40	75	15	150	2
Medicinal Chemistry II	PC 609	2	1	3	Medicinal Chemistry - I	20	40	75	15	150	2
Chinese Language II	PU 604	1	-	1	Registration	10	–	40	–	50	1
Total		13	6	19						950	

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Level IV: Fall semester

Semester (7)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Medical Microbiology	PM 704	2	1	3	Pharmaceutical Microbiology	20	40	75	15	150	2
Pharmacology III	PO 704	2	1	3	Pharmacology -II	20	40	75	15	150	2
Applied & Forensic Pharmacognosy	PG 706	1	1	2	Phytochemistry II	15	25	50	10	100	1
Drug Design	PC 710	1	1	2	Pharmaceutical Organic Chemistry III	15	25	50	10	100	1
Clinical Biochemistry	PB 704	2	1	3	Biochemistry-II	20	40	75	15	150	2
Pharmaceutical Technology I	PT 708	2	1	3	Pharmaceutics IV	20	40	75	15	150	2
Pharmaceutical Legislations and Regulatory Affairs	NP 705	1	-	1	Registration	10	—	40	—	50	1
Elective	PE—	1	1	2	Registration	15	25	60	—	100	1
Total		12	6	19						950	

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Level IV: Spring semester

Semester (8)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract/Tut	Total		Period.	Pract/Tut.	Wr.	Oral		
Clinical Pharmacokinetics	PP 801	2	1	3	Biopharmaceutics and Pharmacokinetics	20	40	75	15	150	2
Drug Information	PO 805	1	1	2	Registration	15	25	50	10	100	1
Basic & Clinical Toxicology	PO 806	2	1	3	Pharmacology-III	20	40	75	15	150	2
Hospital Pharmacy	PP 802	1	1	2	Pharmacology II Pharmaceutics IV	15	25	50	10	100	1
Pharmaceutical Technology II	PT 809	2	1	3	Pharmaceutical Technology I	20	40	75	15	150	2
Community Pharmacy Practice	PP 803	2	1	3	Registration	20	40	75	15	150	2
Elective	PE —	1	1	2	Registration	15	25	60	—	100	1
Total		11	7	18						900	

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Level V: Fall semester

Semester (9)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Biotechnology	PM 905	2	1	3	Pharmaceutical Microbiology	20	40	75	15	150	2
Clinical pharmacy I	PP 904	2	1	3	Registration	20	40	75	15	150	2
Public Health	PM 906	2	-	2	Medical Microbiology	25	—	75	—	100	2
Phytotherapy and Aromatherapy	PG 907	2	1	3	Phytochemistry-II	20	40	75	15	150	2
Good Manufacturing Practice	PT 910	1	1	2	Pharmaceutical Technology I	15	25	50	10	100	1
Marketing & Pharmacoeconomics	NP 906	2	—	2	Registration	25	—	75	—	100	2
Elective	PE —	1	1	2	Registration	15	25	60	—	100	1
Total		12	5	17						850	

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Level V: Spring semester

Semester (10)

Course Title	Course Code	Credit Hours			Prerequisite	Examination Marks				Total Marks	Final Exam. Hours
		Lect.	Pract./Tut	Total		Period.	Pract./Tut.	Wr.	Oral		
Quality Control of Pharmaceuticals	PC 011	2	1	3	Pharmaceutical Analytical Chemistry-II Pharmaceutical Microbiology	20	40	75	15	150	2
First Aid	MD 006	1	--	1	Registration	10	--	40	--	50	1
Drug interaction	PP 005	1	1	2	Pharmacology-III	15	25	50	10	100	1
Advanced Drug Delivery Systems	PT 011	1	1	2	Pharmaceutics IV	15	25	50	10	100	1
Clinical Pharmacy II & Pharmacotherapeutics	PP 006	1	1	2	Clinical Pharmacy I	15	25	50	10	100	1
Entrepreneurship	NP 007	1	1	2	Registration	15	25	50	10	100	1
Clinical Research, Pharmacoepidemiology and & Pharmacovigilance	PP 007	1	1	2	Drug Information	15	25	50	10	100	1
Elective	PE ---	1	1	2	Registration	15	25	60	---	100	1
Total		9	7	16						800	

Pharmaceutics Department Courses

Course Code	Credit Hours	Course Name
PT 101	**1+0**	**Pharmacy Orientation**
PT 202	**2+1**	**Physical Pharmacy**
PT 303	**2+1**	**Pharmaceutics-I**
PT 404	**2+1**	**Pharmaceutics-II**
PT 505	**2+1**	**Pharmaceutics-III**
PT 606	**2+1**	**Biopharmaceutics & Pharmacokinetics.**
PT 607	**2+1**	**Pharmaceutics-IV**
PT 708	**2+1**	**Pharmaceutical Technology I**
PT 809	**2+1**	**Pharmaceutical Technology II**
PT 910	**2+1**	**Good Manufacturing Practice.**
PT 011	**2+1**	**Advanced Drug Delivery Systems.**
Total	**29**	

PT 101 Pharmacy Orientation (1+0) **مدخل الصيدلة**

This is a course to acquaint the beginning pharmacy student with the multiple aspects of the profession of pharmacy, including the mission of pharmacy, role of pharmacist in society and pharmacy careers, classification of medications, interpretation of prescriptions and medication orders, general dispensing procedure and factors affecting drug dosage, sources of drugs, different dosage forms and various routes of administration. In addition to the history of pharmacy practice in various civilizations.

PT 202 Physical Pharmacy (2+1) **صيدلة فيزيائية**

This course provides students with knowledge of physicochemical principles essential for the design and formulation of pharmaceutical products. Students are introduced to the fundamental concepts of states of matter, Phase equilibrium, colligative properties, isotonicity solubility, dissolution, partition coefficient, surface and interfacial phenomena, surface active agents, adsorption and its application in pharmacy and rheological behavior of dosage forms**.**

PT 303 Pharmaceutics I (2+1) **مستحضرات صيدلية 1**

This course is a study of the system of weights, measures, mathematical expertise and pharmaceutical calculations requisite to the compounding, dispensing, and utilization of drugs in pharmacy practice. It is also concerned with all manufacturing formulations aspects, packaging, storage and stability of liquid dosage forms including solutions (aqueous and non-aqueous), suspensions, emulsions and colloids with emphasis on the technology and pharmaceutical rationale fundamental to their design and development. The incompatibilities occurring during dispensing are also considered.

PT 404 Pharmaceutics II (2+1) **مستحضرات صيدلية 2**

This course covers the structure and function of the skin, target area of treatment after topical application to skin, basic principles of diffusion through membranes and factors affecting percutaneous absorption, enhancement of skin penetration, transdermal drug delivery systems (TDDS). It also describes the principles and techniques involved in the formulation and manufacturing of traditional dermatological semisolid dosage forms (creams, ointments, gels and pastes) and cosmetic products.

PT 505 Pharmaceutics III (2+1) **مستحضرات صيدلية 3**

The course introduces the students to the kinetics of drug decomposition including rate and order of the reaction, determination of the half-life, expiry date and shelf-life by different methods, stability testing, and in-vitro possible drug/excipients interaction. It also describes the principles and techniques involved in the formulation, and manufacturing of solid dosage forms including powders, granules, tablets, capsules and suppositories.

PT 606 Biopharmaceutics and Pharmacokinetics (2+1) **الصيدلة الحيوية وحركية الدواء**

This course aims to provide students with an understanding of the relation between the physicochemical properties of the drug and its fate in the body. The course explores the principles of biopharmaceutics and strategies for enhancing drug delivery and bioavailability. Integration of knowledge gained from other courses is emphasized to design and assure the quality of drug products. Students will also be introduced to the principles of pharmacokinetics (absorption, distribution, metabolism and elimination). The concepts of bioequivalence, biowaivers and in vitro-in vivo correlations (IVIVC's) will be discussed along with different models of drug disposition. The course prepares students for their evolving role in utilizing pharmacokinetics to guide formulation, dosage regimen design and optimizing drug usage.

PT 607 Pharmaceutics IV (2+1) **مستحضرات صيدلية 4**

This course involves principles of formulation, development, sterilization, packaging and quality control testing of pharmaceutical sterile drug products. Principles for calculation and manipulation of parenteral and ophthalmic preparations, vaccines and blood products are emphasized. The course also covers the basic principles of formulation, sterilization, packaging and applications of radiopharmaceuticals in pharmacy and medicine. An in depth study on the formulation, manufacturing, quality control testing and applications of aerosols and other inhalation products is also accentuated.

PT 708 Pharmaceutical Technology I (2+1) **تكنولوجيا صيدلية 1**

The course provides students with an introduction to industrial pharmacy. It deals with the principles of various unit operations such as heat transfer, evaporation, drying, distillation, filtration, centrifugation, crystallization and extraction. It focuses on the application of these unit operations in pharmaceutical industry with emphasis on the equipment and machines used during the production of different dosage forms.

PT 809 Pharmaceutical Technology II (2+1) **تكنولوجيا صيدلية 2**

This course is a continuation of the study of the various unit operations in pharmaceutical industry with emphasis on size reduction, size separation, size analysis and size enlargement involved in the process development, scale-up and manufacturing of pharmaceutical drug products in industry (conventional / advanced nanotechnology based). In addition to the container/closure systems, some of the packaging processing methods are covered. Moreover, the vision about designing a quality product and its manufacturing process to consistently deliver the intended performance of the product to meet patient needs is discussed by applying Quality-by-Design principles.

PT 910 Good Manufacturing Practice (1+1) **ممارسة التصنيع الجيد**

This course involves the principles of the Current Good Manufacturing Practices (cGMP). It exposes students to all aspects of validation, calibration, inspection and the requirements for manufacturing facilities. It also provides students with a review of the process engineering, technology transfer, personnel management, training and hygiene, premises and contamination control, documentation and auditing, process deviation with emphasis on risk management, complaint handling and product recall theory.

PT 011 Advanced Drug Delivery Systems (1+1) **نظم توصيل الدواء المتقدمة**

The course aims to provide students with insights and competencies related to principles of pharmaceutical pre-formulation as a gateway to dosage forms design and formulation. Emphasis is placed on developing formulations based on the physical and chemical properties of the drug substance and the intended use of the drug product. The course also introduces the students to the formulation principles and applications of novel and targeted drug delivery systems by transforming proteins, genes, and other biotechnology driven compounds into therapeutic products. In addition to formulation aspects of biotechnology derived pharmaceuticals, it also covers the application of polymers and excipients to solve problems/issues concerning the optimization of absorption, selective transport, and targeting.

Pharmacognosy Department Courses

Course Code	Credit Hours	Course Name
PG 101	2+1	Medicinal Plants
PG 202	2+1	Pharmacognosy I
PG 303	2+1	Pharmacognosy II
PG 504	2+1	Phytochemistry I
PG 605	2+1	Phytochemistry II
PG 706	1+1	Applied & Forensic Pharmacognosy
PG 907	2+1	Phytotherapy and Aromatherapy
Total	20	

PG 101 Medicinal Plants (2+1) **النباتات الطبية**

The aim of the course is to provide students with knowledge necessary to identify and prepare a crude drug from the farm to the firm. Students should acquire knowledge concerning dusting powders, plant cytology, physiology and medicinal leafy plants and their taxonomy. In this course, the student will study: importance of natural products, preparation of natural products-derived drugs including collection, storage, preservation and adulteration. The course will introduce the students to the different classes of secondary metabolites. In addition, the course will discuss and address the variability in occurrence of pharmacologically active substances in certain official medicinal leafy plants according to their WHO monographs.

PG 202 Pharmacognosy I (2+1) **عقاقير 1**

Based on the Egyptian flora and other florae of wild and cultivated medicinal plants that are used in the pharmaceutical, cosmetic and food industries in the global & Egyptian market. The course introduces students to some botanical drugs of leaves, flower, seeds, bark and wood origin. During the lectures and practical sessions, students learn to identify examples of these drugs in their entire and powdered forms. Student will learn about the major constituents, folk uses, clinically proven uses, benefits, precautions of those medicinal plants. Possible herbal-drug interactions of selected examples of these drugs and to have an overview over their phytopharmaceuticals available on the market specially the Egyptian market.

PG 303 Pharmacognosy II (2+1) **عقاقير 2**

After completion of the course the student should have the knowledge and skills that enable the student to differentiate between different organs of through their monographs. The course comprises the study of identification of different organs through their monographs. (fruits, herbs, Subterranean organs, unorganized drugs in addition to drugs of marine and animal origin), including identify their active constituents and adulterants describe micro- and macro-morphological characteristics, benefits and precautions of their medicinal uses, side effects and contraindications and to have an overview over their phytopharmaceuticals available on the market specially the Egyptian market.

PG 504 Phytochemistry I (2+1) **كيمياء العقاقير 1**

Based on complementary medicine and Egyptian medicinal plants that can be used as natural extracts, bioactive raw materials and phytochemical standards to serve the pharmaceuticals, cosmetics and food industries in Egypt. The course aims to gain students the knowledge and skills that enable them to understand, describe and deal with the chemistry of volatile oils, resins, miscellaneous terpenoids, bitters of plant or animal origin, carbohydrates and glycosides of plant or animal origin and different techniques used for their preparation, identification and determination. Also, the students should become aware of different chromatographic methods used for isolation and analysis of different plant constituents and their pharmacological actions and medicinal uses.

PG 605 Phytochemistry II (2+1) **كيمياء العقاقير 2**

In continuation with Pharmacognosy I, this course aims to enable students to demonstrate the knowledge and experience that enables her/ him to understand, describe and deal with the chemistry of alkaloids, tannins and antioxidants of plant, fungi or animal origin as well as techniques for their isolation, identification and determination in their respective sources. Finally, the course focuses on the structure activity relationships (SAR) of these natural products derived compounds and their pharmacophoric features.

PG 706 Applied and Forensic Pharmacognosy (1+1) **العقاقير التطبيقية والشرعية**

The course aims to provide pharmacy students with sufficient knowledge concerning quality control from herbal aspects, sampling, structural, physical and analytical standards, purity, safety and adulteration of drugs and their detection. It also covers the modern chromatographic techniques employed for the evaluation of natural product and their products. It also provides the student with basic knowledge about the application of plant biotechnology for the production of pharmaceutically active materials. The course also includes an overview on forensic pharmacognosy including plants and their natural products that constitute health hazards, or intended for criminal uses to produce, abortion, loss of mental control, hallucination, heart arrest. Also it includes the study of drug dependents, narcotics, analgesics psych energetics, euphoric. Mycotoxin as a serious threat to general health and safety of community, contamination of food material with poisonous fungi.

PG 907 Phytotherapy and Aromatherapy (2+1) **العالج بالنباتات الطبية والعلاج العطرى**

Upon successful completion of this course, the students should be able to know guidelines for prescribing herbal medicinal drugs on the basis of the pharmacological properties of these drugs including therapeutic uses, mechanism of action, dosage, adverse reactions, contraindications and drug interactions. The course also allows students understand pharmacotherapeutic principles applied to the treatment of different diseases, pharmacovigilance and rational use of drugs. Also the student should understand the basis of complementary and alternative medicine with emphasis on herbal remedies, nutritional supplements, homeopathies, aromatherapy and their effect on maintaining optimum health and prevention of chronic diseases. It includes studying of medicinal plants portfolios in relation to phytopharmaceuticals in Egyptian market.

Pharmacology and Toxicology Department Courses

Course Code	Credit Hours	Course Name
PO 401	**1+0**	**Biostatistics**
PO 502	**2+1**	**Pharmacology-I**
PO 603	**2+1**	**Pharmacology-II**
PO 704	**2+1**	**Pharmacology-III**
PO 805	**1+1**	**Drug Information**
PO 806	**2+1**	**Basic & Clinical Toxicology**
Total	**15**	

PO 401 Biostatistics (1+0) **الإحصاء الحيوي**

This course provides basic concepts of biostatistics and data analysis. It includes introduction to descriptive and inferential statistics, interpretation of estimates, confidence intervals and significance tests, elementary concepts of probability and sampling; binomial and normal distribution, basic concepts of hypothesis testing, estimation and confidence intervals, t-test and chi-square test, linear regression theory and the analysis of variance.

PO 502 Pharmacology-I (2+1) **فارماكولوجي 1**

The general principles of pharmacology are presented; such as pharmacokinetics, pharmacodynamics, receptor theory, drug interaction and principle of therapeutics This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology to disease processes regarding the autonomic, neuromuscular and autacoids.

PO 603 Pharmacology-II (2+1) **فارماكولوجي 2**

This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology disease processes regarding drugs acting on cardiovascular systems, central nervous system, gastro-intestinal tract, pulmonary systems and hematologic disorders. Antihyperlipidemic drugs are also included.

PO 704 Pharmacology-III (2+1) **فارماكولوجي 3**

This course integrates principles of pharmacology with conceptual knowledge of physiology and pathophysiology disease processes regarding drugs acting on endocrine system. Chemotherapeutic drugs including antimicrobials, anticancer and immunosuppressant are within the scope of the course. Stem cell therapy is also included. The anti-inflammatory, analgesics as well as gout treatments are also included.

PO 805 Drug Information (1+1) **معلومات الدواء**

This course introduces the student to the concept and need of drug information, types of drug information resources (primary, secondary and tertiary literature), computerized and online drug information, literature evaluation and critical appraisal, retrieval of information. It also aims at providing the students with the professional skills required to effectively and accurately answer medication- related questions in a systematic and evidence based approach.

PO 806 Basic & Clinical Toxicology (2+1) **علم السموم الأساسى والاكلينيكي**

This course provides basics and concepts of toxicology including the mechanism of toxicity, target organ and treatment of toxicity.Toxic groups including heavy metals, toxic gases, animal, plant and marine poisons, pesticides and radiation hazards are covered. Environmental, occupational, reproductive and genetic toxicology as well as drug abuse are included. Postmortem sampling for detection of poisons, methods of detection, interpretation of results and writing of a report are also covered.

Biochemistry Department Courses

Course Code	Credit Hours	Course Name
PB 201	**1+1**	**Cell Biology.**
PB 402	**2+1**	**Biochemistry I**
PB 503	**2+1**	**Biochemistry II**
PB 704	**2+1**	**Clinical biochemistry.**
Total	**11**	

PB 201 Cell Biology (1+1) **بيولوجيا الخلية**

This course will be delivered through the **Department of Biochemistry and Department of Microbiology and Immunology.** The cell theory and cell structure (membranous and non-membranous organelles, cell inclusions and the nucleus, macromolecules of the cell), DNA and genetic code, cell cycle and control of cell number, from gene to protein (transcription, protein synthesis, folding of peptides), transport of biomolecules across membranes, cellular energetics, ions and voltages and intercellular communication will be covered.

PB 402 Biochemistry I (2+1) **كيمياء حيوية 1**

Proteins structure and function, amino acids as precursors for biosynthesis of biomolecules (e.g. neurotransmitters , nucleotides, …), carbohydrates (glycoproteins, proteoglycans and glucose transporters), lipids (physiologically important lipid molecules – cholesterol and steroids – lipoprotein metabolism), enzymology (enzyme kinetics, regulation, enzyme inhibitors as drugs), hemoglobin and porphyrins (Hb derivatives and types, metabolism of Hb and regulation), biological oxidation and ATP synthesis and clinical correlations will be covered.

PB 503 Biochemistry II (2+1) **كيمياء حيوية 2**

Energy production from dietary fuels (carbohydrates, lipids and proteins), integration of metabolism (Feed/fast cycle, diabetes mellitus and obesity), nitrogen metabolism and balance, hormonal regulation of metabolism, bio-signaling, inborn errors of metabolism, biochemistry of cancer and aging – Food biochemistry (milk – probiotics), free radicals and antioxidants will be coverd.

PB 704 Clinical Biochemistry (2+1) **كيمياء حيوية اكلينيكية**

Biochemical/pathophysiological changes and laboratory diagnostic markers for disorders of (endocrine glands, renal function, hepatic function, gastric function, bone and mineral metabolism, plasma proteins and lipoproteins) will be covered. Clinical enzymology, myocardial infarction, electrolytes, blood gases and acid-base balance, handling, preservation, storage and analysis of biological samples, homeostasis and biochemical aspects of hematology and blood analysis, urine analysis, tumor markers and recent diagnostic biomarkers will be introduced.

Pharmaceutical Chemistry Department Courses

Course code	Credit Hours	Course Name
PC 101	2+1	Pharmaceutical Analytical Chemistry I
PC 102	2+1	Pharmaceutical Organic Chemistry I
PC 203	2+1	Pharmaceutical Analytical Chemistry II
PC 204	2+1	Pharmaceutical Organic Chemistry II
PC 305	1+1	Pharmaceutical Analytical Chemistry III
PC 306	2+1	Pharmaceutical Organic Chemistry III
PC 407	2+1	Instrumental Analysis
PC 508	2+1	Medicinal Chemistry I
PC 609	2+1	Medicinal Chemistry II
PC 710	1+1	Drug Design
PC 011	2+1	Quality Control of Pharmaceuticals
Total	31	

PC 101 Pharmaceutical Analytical Chemistry I (2+1) **كيمياء تحليلية صيدلية 1**

Chemical Kinetics, rate of reaction, first Order reaction, rate law, second order and third order of reaction, molecularity, chemical equilibrium, Theories of reaction rate, activation energy and catalysis, Photochemistry, absorbed energy, quantum yield and chemical equilibrium. Introduction to general chemistry, types of chemical reactions, calculations of concentrations of substances. Analysis of anions, analysis of cations, analysis of mixture of anions and cations.

PC 102 Pharmaceutical Organic Chemistry I (2+1) **كيمياء عضوية صيدلية 1**

The objective of this course is to provide students with the basic knowledge in pharmaceutical organic chemistry, which will serve as fundamentals for other courses offered during subsequent semesters. This course involves electronic structure of atoms, alkanes [nomenclature, synthesis and reactions (free radical reactions)], and cycloakanes. Stereochemistry (Optical isomers, racemic modification, nomenclature of configurations). Alkenes, alkadienes and alkynes. Alkyl halides (nomenclature, preparation and chemical reactions (SN1, SN2, E1, E2). Arenes and aromatic compounds (Kekule structure, Huckel rule, Electrophilic aromatic substitution and orientation). The practical sessions of this course help students gain skills required to purify and identify organic compounds of different classes such as aliphatic and aromatic aldehydes, ketones alcohols and hydrocarbons, halogenated hydrocarbons.

PC 203 Pharmaceutical Analytical Chemistry II (2+1) **كيمياء تحليلية صيدلية 2**

Acid-Base theory, titration curves, indicators, applications. Titrations in non aqueuse media, classification of solvents, theory and applications. Precipitimetric titrations, solubility product principle, titration curves, Mohr's method. volhard's method, Fajans' method, pharmaceutical application. Complexometric reactions, theory, reaction with EDTA, indicators and applications.

PC 204 Pharmaceutical Organic Chemistry II (2+1) **كيمياء عضوية صيدلية 2**

This course involves different classes of organic compounds: aryl halides, Alcohols, Phenols, ethers & epoxides, aldehydes, ketones, carboxylic acid and acid derivatives, sulphonic acids, and nitrogenous compounds.

PC 305 Pharmaceutical Analytical Chemistry III (1+1) **كيمياء تحليلية صيدلية 3**

Redox titations, theory, oxidation potentials, Nernest equation, titration curves, redox indicators, selected oxidants and reductants, applications of redox titrations will be introduced. The course also covers applied pharmaceutical analysis such as water analysis (water hardness, analysis of chloride, chlorine, iron, oxidizable matter, … in water. Electrochemical methods, electrode potential, reference electrodes, indicator electrode, applications. Conductomertric titration: ionic conductance, definition of cell constant, conductance, applications. polarography: ILkovic equation, dropping mercury electrodes, diffusion current, applications, derivatization polarography.

PC 306 Pharmaceutical Organic Chemistry III (2+1) **كيمياء عضوية صيدلية 3**

This course involves: carbohydrates, amino acid & peptides, polynuclear and heterocyclic chemistry. In addition, it provides an introduction about the use of different spectroscopic tools, including UV, infrared (IR), nuclear magnetic resonance (NMR) and mass spectrometry (MS) for the structural elucidation of organic compounds.

PC 407 Instrumental Analysis (2+1) **تحليل آلي**

Spectroscopic methods of analysis which include UV/Vis spectroscopy, principal, instrumentation, factors affecting absorption and applications in pharmaceutical analysis. Fluorimetric methods, principal instrumentation, factors affecting fluorescence intensity and applications in pharmaceutical analysis. Atomic spectroscopy; principal and instrumentation in addition to chromatographic methods for analytical chemistry which includes: TLC, column chromatography, HPLC / UPLC, GC and electrophoresis.

PC 508 Medicinal Chemistry I (2+1) **كيمياء دوائية 1**

This course is tailored to assist the students to gain the drugs affecting the autonomic nervous system (ANS), drugs acting on the cardiovascular system (CVS), central nervous system (CNS). The course handles different classes of antibiotics and antimicrobials (natural and synthetic), beside other synthetic chemotherapeutic agents (including antivirals, antifungals and antiparasitics). Additionally, various anticancer therapies, steroidal hormones and related drugs are also covered.

PC 609 Medicinal Chemistry II (2+1) كيمياء دوائية 2

The course is tailored to assist the students to gain the drugs affecting neurodegenerative disorders. Moreover, endocrine-related drugs (Diabetes, thyroid and calcium-regulating agents), antihistamines (H1, H2 blockers and anti-ulcer PPIs), drugs controlling pain and inflammation (NSAIDs, local anaesthetics and rheumatoid drugs) are also handled.

PC 710 Drug Design (1+1) تصميم الأدوية

The prime objective of this course is to prepare the students for professional practice by understanding the essentials of Medicinal Chemistry, and how the drugs, biological and toxicological activities are strongly correlated to their chemical structures (structure-activity relationship; SAR), physicochemical properties and metabolic pathways. Focusing on patient-directed clinical care, the molecular aspects governing drugs' pharmacokinetics (ADME), pharmacodynamics, optimization of drug action, possible side effects, in addition to understanding drug interactions are targeted. In terms of chemistry, SAR, mechanism of action and side effects. The course is also designed to familiarize the students with drug design and molecular modelling covering structure-based and ligand-based drug design. This also includes the process of drug discovery and development from target identification until approval of a new drug. Much concern is given to lead structure identification, optimization and targeting certain receptors and enzymes active sites. Additionally, the course addresses the study of molecular docking, pharmacophore generation, and molecular modifications including prodrug design, stereochemistry alterations, isosteric replacement, drug metabolism and Quantitative Structure-activity relationship (QSAR).

PC 011 Quality Control of Pharmaceuticals (2+1) رقابة جودة الأدوية

The course is shared with departments: Microbiology & Chemistry:

I) Quality control & quality assurance of pharmaceuticals: The course has to be designed for quality control microbiology professionals , quality assurance or regulatory affairs personnel who have responsibility for the performance of Bioburden, Endotoxin and Sterility Testing or for data review, pharmacists performing sterile compounding.Principles, methods and procedures of different quality control tests used for evaluation of safety, potency and palatability of pharmaceutical products of small and large molecules drugs (biologicals) including herbal drugs have to be taught. The standard pharmacopeial methods and procedures as well as international guidelines as WHO, EMA, TGA should be discussed. II) Good Analytical Practice and Sampling: Introduction, Sampling of pharmaceuticals and related materials, Type of sampling tools, Sampling plans. III) Documentation. IV) Validation of analytical methods according to ICH Guidelines Q2 R1. Compendial testing, Validation of analytical methods, Data elements required for assay validation. V) drug stability, stability studies and stability indicating methods Drug stability, Stability testing, forced degradation studies, stability indicating assay methods for drugs according to ICH Q1R2 Guidelines. Stress conditions for drug degradation according to ICH Q1R2 Guidelines. Factors affecting drug degradation, drug expiration, drug withdrawal from the market. Pharmaceutical regulations according to FDA and EMA (European medicine agency) and ISO and BSI. Drug-excipient interactions and adduct formation; analytical techniques used to detect drug-excipient compatibility, mechanism of drug-excipient interactions, examples. VI) Official methods of analysis applied to raw materials and end products.

Microbiology and Immunology Department Course

Course Code	Credit Hours	Course Name
PM 401	**2+1**	**General Microbiology and Immunology**
PM 502	**2+1**	**Pharmaceutical Microbiology**
PM 603	**2+1**	**Parasitology and Virology**
PM 704	**2+1**	**Medical Microbiology**
PM 905	**2+1**	**Biotechnology**
PM 906	**2+0**	**Public Health**
Total	**17**	

PM 401 General Microbiology and Immunology (2+1) **ميكروبيولوجيا عامة و مناعة**

The course provides students with a combination of laboratory and theoretical experience exploring the general aspects of microbiology. It includes knowledge of microorganisms, their morphology, diversity, cell structure and function, cultural characteristics, growth, metabolism, role of microorganisms in infectious diseases and microbial pathogenesis. It also clarifies different mechanisms of transport across bacterial cell membrane, metabolic pathways and physiology of bacteria. The course also covers the principles of genetic characters including DNA and RNA structures, replication, different forms of mutation and mutagenic agents. It also explores the basic concepts microbial growth, cultivation and reproduction. Moreover, it introduces the modern concepts of medical immunology, with an emphasis on host parasite relationship, Non-specific and specific immunity, Mechanism of protective immunity. Molecular and cellular immunology, including antigen and antibody structure, function and reaction between them, effector mechanisms, complement, and cell mediated immunity. Active and passive immunization. Hypersensitivity and in vitro antigen antibody reactions, Immuno-deficiency disorders, Autoimmunity and auto-immune disease, organ transplantation.

PM 502 Pharmaceutical Microbiology (2+1) **الميكروبيولوجيا الصيدلية**

This course describes in detail the physical and chemical methods of bacterial eradication and how to effectively control microbial growth in the field of pharmaceutical industry / hospitals. It further describes the means of preservation of pharmaceutical products, as well as cosmetics, followed by the proper tests of quality control and sterility assurance. Sterilization, sterilization indicators, sterility testing, aseptic area, the microbiological quality of pharmaceuticals. Validation of sterilization process. Moreover, it explains the different groups of antimicrobials, their mechanism of action and resistance of microbes to biocides. Microbiological evaluation of antiseptics, disinfectants and preservatives. Antibiotics, classification and mechanism of action, Antiviral and antifungal agents, different classes of antibiotics including the new categories and new approaches to overcome bacterial resistance & antibiotics clinical abuse.

PM 603 Parasitology and Virology (2 +1) **علم الطفيليات و الفيروسات**

Part of this course will focus on parasitic infections of humans with knowledge concerning biological, epidemiological and ecological aspects of parasites causing diseases to humans. It concerns with different parasitological related diseases in in Egypt causing serious health problems. This part of the 56 course will discuss medical helminthology, protozoology and entomology concerning their morphological features, life cycle, pathogenesis, clinical manifestations, different diagnostic techniques, the most recent lines of treatment and prevention with control strategy for each parasitic infection. Moreover, it covers laboratory diagnosis of human parasitic infections. The other part of the course provides students with the essential knowledge to recognize the epidemiology, mechanisms of pathogenesis, clinical picture, methods of laboratory diagnosis, treatment, prevention and control measures of RNA and DNA viral infections in humans Courses of Pharmacy Practice

PM 704 Medical Microbiology (2+1) **الميكروبيولوجيا الطبية**

The course aims at studying microorganisms causing infectious disease in human beings. The infectious diseases, their etiology and clinical manifestation, routes of transmission, treatment and techniques in detection and identification of pathogenic microorganisms caused by Gram positive cocci and bacilli, Gram negative cocci and bacilli and mycobacteria of major significance to public health will be studied.

PM 905 Biotechnology (2+1) **التقنية الحيوية**

The course aims to provide students with fundamentals, scope and applications in biotechnology through studying fermentation technology, upstream, downstream, scaling up and down processes, use of molecular techniques for production of recombinant products and other major biotechnological products, biotransformation, bioremediation, bioleaching, bioinsecticides, biosurfactants and biopolymer production

PM 906 Public Health (2+0) **صحة العامة**

This course aims at understanding all scientific disciplines required for health education and promotion directed to the community health. How epidemiology acts as the bases of public health actions will be taught. Detailed scientific information and practices programs will be provided for control of communicable, non-communicable diseases, improving mental, social, environmental, occupational, geriatric and family health, use of sufficient and balanced food and nutrition, supplying safe drinking water, treating and disposing wastes and proper intervention during disasters.

Pharmacy Practice Department Courses

Course Code	Credit Hours	Course Name
PP 801	2+1	Clinical Pharmacokinetics
PP 802	1+1	Hospital Pharmacy
PP 803	2+1	Community Pharmacy Practice
PP 904	2+1	Clinical Pharmacy I
PP 005	1+1	Drug interaction
PP 006	1+1	Clinical Pharmacy II & Pharmacotherapeutics
PP 007	1+1	Clinical research, Pharmacoepidemiology and Pharmacovigilance
Total	17	

PP 801 Clinical Pharmacokinetics (2+1) **الحركية الدوائية الاكلينيكية**

This course provides basic principles of pharmacokinetics and their application to the clinical setting. Single Intravenous bolus and oral kinetics, IV infusion, multiple IV bolus, short infusion &oral dosing, non-linear pharmacokinetics, pharmacokinetic models. Sources of variability in pharmacokinetics, dosage regimen and dosage adjustment in children, obese, elderly patients and chronic disease states, therapeutic drug monitoring and pharmacogenomics approaches will be covered.

PP 802 Hospital Pharmacy (1+1) **صيدلة المستشفيات**

The course aims to introduces students to hospital pharmacy organization, structure, management and related activities on both technical and administrative levels in accordance with national and international established guidelines. Administrative services include: the pharmacy, the pharmacy and therapeutic committee and policy making, the hospital formulary, medication purchasing, distribution and dispensing systems. The pharmaceutical (technical) services include: preparation of intravenous (IV) admixtures, total parenteral nutrition (TPN) fluids, renal dialysis fluids, dispensing and safe handling of radiopharmaceuticals, cytotoxic drugs, and medical gases.

PP 803 Community Pharmacy Practice (2+1) **ممارسة صيدلية المجتمع**

The course provides students with competencies and knowledge for the provision of quality pharmaceutical care in a community pharmacy setting aiming at improving use of medicines and therapeutic outcomes. The course covers differentiation between minor and major ailments and responding to minor ailments with over-the-counter products. It also provides concepts of patient assessment, counselling, and monitoring in community pharmacy and in outpatient care settings and introduces students to pharmaceutical care services for chronic-diseased outpatients and to psychosocial aspects in patient care. In addition, the course provides the students with competencies to promote the public health role of pharmacist including health promotion and disease prevention activities.

PP 904 Clinical Pharmacy I (2+1) **صيدلة إكلينيكية 1**

Definition and concepts of clinical pharmacy and pharmaceutical care, and qualification to become a clinical pharmacy. Patient history, medication reconciliation, therapeutic planning and drug-related problems. Interpretation of clinical laboratory data and physical examination. Providing Medication Therapy management services. Principles of special care populations (geriatric, pediatric, renal and hepatic patients, obesity &pregnancy& lactation). The course also introduces the student to the principles of management and supportive care of oncological diseases, blood disorders and nutritional deficiencies.

PP 005 Drug interaction (1+1) **تفاعلات الأدوية**

This course provides the knowledge and skills enabling them to develop professional competencies in the recognition and discussion of the pharmacological aspects of drug-drug, drug-chemical, drug-herb or drug-food interactions and their clinical significance as well as the application of that knowledge to minimize the risk and outcome of interactions. It covers different types of drug interaction including pharmaceutical interactions, pharmacokinetic interactions, pharmacodynamic interactions, herbal & food drug interactions, alcohol and smoking drug interactions, CNS drug interactions, interactions of cardiovascular acting drugs, interactions of anticoagulants, interactions of anti-infectives, interactions of antihistaminics and immune-based therapies, interactions of hormones, and drug-disease interactions. The course is designed to familiarize students with the major types of drug interactions (Pharmacokinetic, pharmacodynamic and pharmacogentic interactions) in the clinical setting, in addition to drug food and drug disease interactions. The course compromises digitalis drug interactions, anticoagulants, hypoglycemic interactions, antineoplastic drug interactions, antihypertensive interactions and anticonvulsant Interactions. Students will be expected to determine whether a given interaction is clinically significant or required pharmacist intervention, make rational, scientifically recommendations for management of drug interactions.

PP 006 Clinical Pharmacy II & Pharmacotherapeutics (1+1) **صيدلة إكلينيكية 2 والعلاج الدوائى**

The course introduces the student to the principles of pharmacotherapeutics & management of the common disease states (e.g. cardiovascular diseases, gastrointestinal diseases, respiratory diseases, endocrine diseases, obstetrics and gynecology, rheumatic diseases, renal diseases, CNS diseases).

PP 007 Clinical research, Pharmacoepidemiology and Pharmacovigilance (1+1)
الأبحاث الاكلينيكية وعلم الأدوية الوبائي واليقظة الدوائية

This course introduces the student to the basic principles of clinical research, design of research studies, types of research studies, clinical trials, statistical presentation of research data and ethical guidelines in drug research. This course addresses a range of study designs and analytic techniques for observational studies on the utilization, safety, and effectiveness of pharmaceuticals. Students will develop an understanding of how to plan, implement, analyse, and criticize pharmacoepidemiological studies. This course also provides the student's with understanding of pharmacovigilance importance, concept, processes, systems, global safety standards and regulations and reporting systems.

Medical Courses

Course Code	Credit Hours	Course Name
MD 101	1+0	Medical Terminology
MD 202	2+1	Anatomy& Histology
MD 203	1+0	Psychology
MD 304	2+1	Physiology and Pathophysiology
MD 405	1+1	Pathology
MD 006	1+0	First Aid
Total	11	

MD 101 Medical Terminology (1+0) مصطلحات طبية

Introduction to medical and pharmaceutical terminologies, medical abbreviations, medical idioms, suffixes and prefixes, medical terms pertaining to major body systems will be covered.

MD 202 Anatomy& Histology (2+1) علم الأنسجة والتشريح

Histology: Cytology, various tissues (epithelial, connective, muscular, and nervous), heart, blood vessels, lymphatic organs, skin and its appendages, systems (digestive and associated glands, respiratory, urinary, reproductive, and central nervous system), endocrine glands, and eye will be covered.

Anatomy: Introduction to skeletal, muscular, and articular systems, fascia, nervous, cardiovascular, and lymphatic systems, digestive, respiratory, and urogenital systems, endocrine glands will be covered. Cytology: blood, liver, spleen, lung, kidney, lymph node, cardiac muscle, aorta, stomach, and intestine will be covered.

MD 203 Psychology (1+0) علم النفس

The course introduces different principles, theories and vocabulary of psychology as a science. The course also aims to provide students with basic concepts of social psychology, medical sociology and interpersonal communication which relate to the pharmacy practice system that involves patients, pharmacists, physicians, nurses and other health care professionals.

MD 304 Physiology and Pathophysiology (2+1) علم وظائف الأعضاء و وظائف الأعضاء المرضي

Physiology: Introduction to body water, homeostasis, transport of materials, nervous systems, neuron structure and function (reflex arc), cardiovascular system, blood, respiratory cycle, gastrointestinal, reproductive, and renal systems, endocrine glands and body temperature regulation will be covered. **Pathophysiology:** Introduction to pathophysiology, cell injury, inflammation and immune response, autonomic nervous system in health and disease, endocrine disorders, pancreatic disorders, fluid and electrolyte imbalance, vascular and haematological disorders, disease of urinary, pulmonary and digestive systems will be covered.

MD 405 Pathology (1+1) **علم الأمراض**

The main aim of Pathology course is to provide the second year student with knowledge and skills for common diseases affecting body organs and system. It helps the student to understand the causes (etiology) of disease, the mechanisms of its development (pathogenesis) and the associated alterations of structure (morphologic changes) and function (clinical manifestations and complications) to be able to determine the most likely diagnosis of the disease.

MD 006 First Aid (1+0) **اسعافات أولية**

The course covers topics of basic life support and medical emergency of different situations including bleeding, shock, poisoning, bone fractures, soft tissue injuries, rescue and transportation. It includes: introduction to first aid ABCs, medical emergencies, effect of temperature, transportation of an injured casualty & first aid kit, respiratory emergencies, fractures and dislocations, bleeding and surgical emergencies, burns and scalds, animal bites or stings and poisoning.

Mathematics Course

Course Code	Credit Hours	Course Name
MS 102	**1 + 0**	**Mathematics**
Total	**1**	

MS 102 Mathematics (1+0) **الرياضيات**

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

Non-Professional Courses

Course Code	Credit Hours	Course Name
NP 101	1+1	Information Technology
NP 102	1+0	Human Rights and Fighting Corruption
NP 303	1+1	Scientific Writing
NP 404	0+1	Communication skills
NP 705	1+0	Pharmaceutical Legislations and Regulatory Affairs
NP 906	2+0	Marketing & Pharmacoeconomics
NP 007	1+1	Entrepreneurship
Total	11	

NP 101 Information Technology (1+1) **تكنولوجيا المعلومات**

This course tends to provide students of all university's faculties with a brief introduction to the world of computers and the concept of information technology including: number systems and data representation, computer system components: hardware & software, storage and input/output systems, Operating systems and Utility Systems, software applications. Also it gives an overview about computer networks and internet: data communication, transmission modes, transmission media, computer networks, internet protocol, and internet services. It practices some computer applications in the laboratory such as Internet Access, word processing and power point. It gives students a practical experience on developing projects related to the specialty of each faculty.

NP 102 Human Rights and Fighting Corruption (1 + 0) **حقوق الانسان ومكافحة الفساد**

يغطي هذا المقررالموضوعات التالية: حقوق الانسان في القانون الجنائى, حق الانسان فى تغيير جنسيته أو التخلى عن احدى جنسياته, المواثيق الدولية المتعلقة بحماية حقوق الانسان, علاقة العولمة والتنمية بالحقوق الاقتصادية والاجتماعية والثقافية, الحقوق الاقتصادية والاجتماعية والثقافية للانسان, حقوق الانسان فى الشريعة الاسلامية, حقوق المرأة فى قانونى العمل والتأمين الاجتماعى, حقوق الانسان فى التقاضى, الحقوق المدنية والسياسية للانسان.

NP 303 Scientific Writing (1 + 1) **الكتابة العلمية**

This course is designed to introduce students to the principles of good scientific writing, to be familiar with basic structure of scientific reports and research articles. It covers methods of paraphrasing, common mistakes in scientific writing, different writing styles, how to write a scientific report, proposal and manuscript, appropriate use of tables and figures in data presentation and evaluation of literature and information sources.

NP 404 Communication skills (0+1) **مهارات الاتصال**

The course will help students develop necessary written and oral communication and presentation skills to improve inter- and intra-professional collaboration and communication with patients and other health care providers.

NP 705 Pharmaceutical Legislations and Regulatory Affairs (1+0)

التشريعات الصيدلية والشؤون التنظيمية

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

NP 906 Marketing and Pharmacoeconomics (2 + 0) **التسويق واقتصاديات الدواء**

Pharmacoeconomics: the basic concepts of health economics, learning basic terms of health economics and understand key principles. Topics cover the economic mechanisms of health care markets as market failures, and government intervention. The course covers the key components of health care financing, and some methods of how to contain health care expenditure. Alongside the major definitions in health technology assessment, students should have an overview about different types of economic evaluation, budget impact analysis and their uses. Moreover, students should get familiar with different methods of pricing among which value-based pricing. **Marketing:** The objective of this course is to introduce students to the concepts, analyses, and activities that comprise marketing management, and to provide practice in assessing and solving marketing problems. The course is also a foundation for advanced electives in Marketing as well as other business/social disciplines. Topics include marketing strategy, customer behavior, segmentation, market research, product management, pricing, promotion, sales force management and competitive analysis.

NP 007 Entrepreneurship (1+1) **ريادة الأعمال**

This course is designed to enhance a student’s knowledge in leadership, business, and financial skills in pharmacy practice while learning the traits of an entrepreneur, current topics in entrepreneurship with a specific focus on pharmacy practice and patient care programs. This course will teach the participants a comprehensive set of critical skills needed to develop a profitable business project. This course is designed to provide the students the personal and business tools including risk-taking, strategic planning, marketing, competitiveness, and social responsibility to make the transition from the academic environment to the daily practice of pharmacy now and in the future, with an emphasis on entrepreneurship.

Elective Courses

Course Code	Credit Hours	Course Name
PT E401	1+1	Cosmetics
PT E402	1+1	Applications of Nanotechnology
PT E403	1+1	Manufacturing of Biopharmaceuticals
PG E404	1+1	Natural Product Drug Discovery
PB E405	1+1	Functional Foods
PC E406	1+1	Green Chemistry
PO E407	1+1	Bioassay
PC E501	1+1	Food Analysis
PO E502	1+1	Immunotherapy
PM E503	1+1	Gene Therapy
PB E504	1+1	Diagnostics Techniques
PP E505	1+1	Nutrition and Diseases
PP E506	1+1	Health and Maternity
PP E507	1+1	Geriatrics

PT E401 Cosmetics (1+1) **مستحضرات التجميل**

This course describes the fundamentals of the cosmetics industry, including; the design and methods of assessment of various cosmetic products like skin care preparations, hair preparations, make-up preparations, antiperspirants, deodorants and hygiene preparations and disinfectants.

PT E402 Applications of Nanotechnology (1 +1) **تطبيقات النانو تكنولوجي**

This course focuses on nanomedicine as a major dynamic branch of nanotechnology, which involves the design, development, evaluation, and application of different nano-systems in the field of medicine. These applications include but are not limited to in vitro diagnostics nanosensors, in vivo imaging nanoprobes, novel intrinsic therapeutic techniques, biomedical implants, tissue engineering and drug delivery to enhance the therapeutic efficacy of drugs and minimize the associated side effects.

PT E403 Manufacturing of Biopharmaceuticals (1+1) **تصنيع الأدوية الحيوية**

This course covers aspects of process development, upstream and downstream processing. Bioreactors and manipulation of living organisms are introduced. Various bioanalytical techniques required for quality assessment of biopharmaceuticals are discussed. Production and assessment of biosimilar products will be covered.

PG E404 Natural Product Drug Discovery (1+1) **اكتشاف الأدوية من مصادر طبيعية**

The course offers a historical perspective on the role of natural products in the discovery of new drugs and new drug targets followed by a discussion of the chemical diversity of natural products and their unique position they occupy in the chemical space. Strategies for drug discovery from natural products are discussed in detail including ethnobotanical investigation, biological screening, virtual screening, chemical screening and de-replication strategies.

PB E405 Functional Foods (1+1) **التغذية العلاجية**

The course aims to address modern cultural trends in diet and nutrition based on a scientific understanding of plant metabolites, their chemistry, and possible biological activity. The course provides definitions and classification of functional foods and fortified food with an emphasis on food chemistry. Examples of functional foods such as dietary fibers, probiotics, prebiotics and antioxidant foods are discussed in detail.

PC E406 Green Chemistry (1+1) **الكيمياء الخضراء**

The course introduces the concept and discipline of green chemistry and places its growth and expansion in a historical context. The course further demonstrates the necessity and viability of the green chemistry methods to chemical sciences and related disciplines. The course introduces the 12 principles of green chemistry as well as the tools of green chemistry including the use of alternative feed stocks or starting materials, reagents, solvents, target molecules, and catalysts. The focus of the course is the application of innovative technology in the development of “greener” routes to improve industrial processes and to produce important products.

PO E407 Bioassay (1+1) **معايرات احيائية**

This course describes different types of assays, requirements of good bioassay, types of screening, assays of drugs, hormones, sera, vaccines, toxins, antitoxins, antibiotics and vitamins.

PC E501 Food Analysis (1+1) **تحليل الغذاء**

This course exposes students to the principles, methods, and techniques of qualitative and quantitative physical, chemical and biochemical analyses of foods. Throughout the course, classical and instrumental methods of analysis are discussed with lesser emphasis on the details of specific methods. Criteria for the choice of various analytical methods are presented. Methods of treating data and sampling techniques are studied. The course also focuses on common methods of proximate analysis and related techniques used in the analysis of food and food ingredients.

PO E502 Immunotherapy (1+1) **العلاج المناعى**

This course describes types of immune deficiencies, autoimmunity, mechanisms of autoimmunity, hypersensitivities and autoimmune diseases. Immunosuppressants, immunostimulants, monoclonal and polyclonal antibodies are highlighted.

PM E503 Gene Therapy (1+1) **العلاج بالجينات**

This course introduces technologies of gene transfer, therapeutic strategies and efficiency and safety issues in gene therapy. The course discusses inherited and acquired diseases that could benefit from gene therapy. Identification of potential targets and approaches for gene therapy, laws, methods, techniques and instruments involved in gene therapy are highlighted.

PB E504 Diagnostics Techniques (1+1) **التقنيات التشخيصية**

This course describes principles of molecular diagnostics, direct and amplified nucleic acid test methods, specimen handling, and the clinical applications, advantages, and disadvantages of molecular diagnostics. Basics of pharmacogenetics and pharmacogenomics will be also covered.

PP E505 Nutrition and Diseases (1+1) **التغذية والأمراض**

This course describes the relationship between nutrition and chronic diseases and discusses nutrition plans for disease prevention or health promotion purposes, nutrition in critically ill patients, nutrition and cardiovascular diseases, DASH diet, nutrition in diabetics, fluid and electrolyte therapy and acidbase balance.

PP E506 Health and Maternity (1+1) **الصحة والأمومة**

This course describes facets of women's health including menstruation, pregnancy, and lactation, biological and sociological factors that modify maternal health, drug categories in pregnancy and drugs secreted in breast milk. Major health problems during pregnancy and management of complications during pregnancy, labor, and postpartum female gynecological problems and family planning methods are highlighted.

PP E507 Geriatrics (1+1) **طب المسنين**

This course describes the impact of aging on different body systems. The course discusses general principles of pharmacotherapy in elderly, older people's nutritional needs, symptoms, diagnosis, and treatment of common geriatric diseases.

University Requirement Courses

Course Code	Credit Hours	Course Name
PU101	1+0	Profession Ethics
PU102	1+0	Scientific English
PU403	1+0	Chinese Language I
PU603	1+0	Chinese Language II
Total	4	

PU101 Profession Ethics (1+0) أخلاقيات المهنة

This course gives the basics of ethics and professionalism. The course discusses types of professional ethics, understanding the ethics of different professions, legal versus ethical terms, code of ethics and professional conduct and professional behavior. Evaluative elements in professional work, professional rights, and ethical thinking are highlighted.

PU102 Scientific English (1+0) لغة إنجليزية علمية

Scientific English is an essential part of the pharmacy curriculum. This course will teach how to structure and write a professional report / research article for publication in a scientific journal. The course will cover good English usage (grammar, punctuation, and writing style), especially from the viewpoint of non-native English speakers.

PU403 Chinese Language I (1+0) لغة صينية 1

For beginners in the language, this course aims at the acquisition of the basic Chinese language skills. Students will learn Chinese characters. Presentation of basic grammar and an introduction to Chinese culture will be taught as a tool to learn the spoken language. Introduction to reading and writing using Chinese language will be given.

PU603 Chinese Language II (1+0) لغة صينية 2

This course aims to improve reading, writing, listening, speaking using Chinese language. Presentation of advanced grammar and more information about Chinese culture will be taught.