Qassim University
جامعة القصيم

كلية الصيدلة

PHARM D PROGRAM

HANDBOOK

2022-2023
VERSION-2

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College Vision, Mission and Values

Vision

A national leadership in pharmacy education and research, and a supporter of effective partnerships

College Mission

Providing accredited pharmacy education to prepare qualified pharmacists and providing professional and research services to promote national development; in an inspiring, governance environment that stimulates innovation, technology and partnership.

Pharm D Program Mission

Providing advanced education to prepare professionally and research-qualified pharmacists to enhance healthcare through national and international partnerships with educational, health and research institutions

Values

- **Belonging:** We promote national loyalty, the spirit of initiative, giving and volunteering.
- **Justice:** We seek to achieve the elements of fairness and equal opportunities for everyone.
- **Honesty:** We perform our work sincerely and adhere to professional ethics and morals.
- **Transparency:** We are committed to disclosure and support accountability and integrity requirements.
- **Perfection:** We apply the highest quality standards to distinguish our outputs and services.
- **Innovation:** We stimulate creative thinking and innovative products of value.
- **Institutional:** We establish a culture of teamwork, in thinking and behavior.

Graduate attributes

Graduate attributes

1.Knowledge and Understanding

1.1 In-depth knowledge in the field of pharmacy: Graduates have a broad and comprehensive knowledge and understanding of the pharmaceutical sciences and methods of research and investigation.

2 .Skills

2.1 Interpersonal skills and interaction with others: Graduates have the ability to communicate effectively (verbal and written) and cooperate with patients, healthcare providers and administrative personnel in all areas of pharmacists' work.

2.2 Analytical and problem solving skills:

2.2.1: Graduates have the ability to solve problems and apply diverse skills and evidence-based critical knowledge to create appropriate solutions to societal challenges in all areas of pharmacists' work.

2.2.2: Graduate have the ability to collect, organize and analyze quantitative and qualitative data that serves healthcare consumers and conducting research in all areas of pharmacists' work.

2.3 Practical and IT skills: Graduates have practical performance and technical skills that will enable them to enter and develop in the labor market in the field of pharmacy.

3.Values

3.1 Ethical and Social Values and Responsibility: Graduates have capacity to work independently and participate in team-works, display integrity and ethics in the pharmacy profession, and actively participate in the service and development of society in all fields of pharmacists' work.

Strategic Goals of Pharm D Program

Strategic Goals

- **Goal 1:** Emphasizing the quality of education and achieving excellence in the pharmacy specialty.
- **Goal 2:** Raising the merit, competitiveness and professionalism of college students.
- **Goal 3:** Strengthening research identity and improving applied pharmaceutical research and innovation to meet the requirements of sustainable development.
- **Goal 4:** Diversifying funding sources and improving spending efficiency.
- **Goal 5:** Completing, developing and sustaining the infrastructure.
- **Goal 6:** Enhancing partnership and knowledge exchange nationally and internationally.

Learning outcomes of the Pharm D program

Learning outcomes of the Pharm D program

1. Knowledge and Understanding

K.1. Describe essential biomedical, pharmaceutical, social, behavioral, administrative and clinical sciences knowledge related to the development and use of medications, natural remedies, and other therapies for the prevention and treatment.

K.2. Describe the concepts and principles of various pharmacy practice settings.

K.3. Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and the prevention and treatment.

K.4. Recognize research and investigation methods in the pharmacy field.

2. Skills

S.1. Integrate pharmaceutical sciences with pharmacy applications.

S.2. Engage in inter-professional healthcare education activities.

S.3. Evaluate scientific and professional literature critically to be utilized in evidence-based practice, conducting research and problem-solving.

S.4. Use advanced techniques, instruments and materials in practical activities and apply basic drug development skills in relevant settings.

S.5. Use mathematical operations and quantitative methods to process data in various pharmacy fields and utilize appropriate information technologies to optimize medication use and patient care.

S.6. Contribute to decision making processes by providing accurate and relevant recommendations in various settings.

S.7. Interpret information obtained from different resources to provide creative solutions for complex problems.

S.8. Communicate clearly and effectively with health care professionals, patients, caregivers, administrative and supportive personnel and the public in various settings

S.9. Construct patient-centered evidence-based pharmaceutical care plans.

3. Values

V.1. Demonstrate leadership skills, accountability and acceptance of responsibility within a team in various settings.

V.2. Advocate patient rights to safe and effective medication use in various setting.

V.3. Evaluate own learning and performance, make decision regarding self-development and practice reflective and independent thinking to effectively manage and respond to routine or unanticipated circumstances.

V.4. Embrace the inter-professional approach to healthcare practices.

V.5. Display integrity, trustworthiness, confidence, self-awareness and the potential of entrepreneurship in various settings.

V.6. Demonstrate empathy, professional attitude, ethical behavior, social and cultural awareness and proper judgment in various settings.

Pharm D Program regulations

Admission requirements

The applicant must successfully pass the preparatory year with cGPA >3.75/5.

Registration into the College of Pharmacy

It is the responsibility of the student to carefully follow these regulations:

- All students entering the college (level-1) should register online for all courses before the registration deadline for the semester.
- Students successfully passing one level are able to add courses for the following level, and so on until they finish all levels. For example, students passing level-1, are able to add courses for level-2 and so on for level-3 onwards.
- If a student fails one course, he/she is able to add it with courses from the following level provided it not overlap or interfere with the final exam schedule or requirement(s).
- Students are able to add failed courses to the following levels for a maximum of 18 credit hours, provided they not overlap or interfere with the final exam schedule or requirement(s).
- Students are allowed to register for a minimum of 12 credit hour courses.
- Students are allowed to drop courses within the first two weeks of the start of instruction.
- Students are allowed to register for general preparatory courses (like Arabic Language Skills, Islamic Culture, Expository Writing, Islamic Economic System) until equivalent of not more than 18 credit hours in other colleges provided this should not overlap with college class schedule.

Classrooms

- Students must arrive in the classroom before the start of the class.
- Attendance should be taken once, for the whole class session, and not for every hour.
- A student will be counted as present if he/she is in class within 10 minutes of the start of class.
- Students coming more than 10 minutes late but within 15 minutes of the start of class may be allowed to attend the class without being marked present.
- Students coming more than 15 minutes after the class starting time will not be allowed to attend the class that day.
- Break time will be strictly followed and students will not be allowed to take more than the stipulated 10-minute break.
- The instructor may combine two break times of 10 minutes each for a class of 3 hours, to allow students to have one 20 minutes' break.
- Students not returning to class on time or not returning at all after the break time will be marked absent for the whole class.

Examination Rules & Regulations

Examination Rules & Regulations

- Students are required to produce a college ID during the examination. If the college ID is not available, any other government issued photo ID will be accepted. If no ID is present, then Student Affairs Unit must be contacted to obtain approval to write the examination.
- Cell phones are not allowed inside the examination hall. All cell phones must be submitted at the front desk before the start of the examination.
- No study materials are allowed inside the examination hall.
- Students should bring their own calculators.
- Students are not allowed to enter the examination room more than 30 minutes after the beginning of the exam and are not allowed to leave the examination room until 30 minutes after the start of the examination during mid-terms.
- Students are not allowed to enter the examination room more than 1 hour after the beginning of the exam and not allowed to leave the examination room until 1 hour after the start of the examination during finals.
- Students who are found cheating will be barred from three future examinations.

Academic system and Exams

Academic system and Exams

Terminologies

1. **Semester:** A period of at least fifteen weeks taught over the period of the courses.
2. **Summer Semester:** A period of time not exceeding eight weeks, during which time shall be doubled for each course.
3. **Academic Level:** The number of levels required for graduation is eight (after the preparatory year for some courses).
4. **Course:** A subject that follows a specific level within the approved study plan at the College in each discipline.
5. **Credit Hours:** Unit (credit hour) means a weekly theoretical lecture of not less than fifty minutes, or a practical or field lesson of not less than one hundred minutes.
6. **Academic Warning:** The notice given to the student due to his cumulative GPA below 2 out of 5.
7. **Quarterly Semester Degree:** The degree awarded for the work that shows the student's achievement during a semester for his tests, research, reports and educational activities.
8. **The final Exam:** A test based on the course material which is held once at the end of the semester.
9. **Final Exam score:** The grade that the student receives in each course for his performance on the final exam.
10. **Grade Point Average (GPA):** The Grade Point Average is a measure of a student's academic achievement at a college or university; it is calculated by dividing the total number of grade points achieved by the total number attempted
11. **Cumulative Grade Point Average (CGPA):** A Cumulative Grade Point Average is a calculation of the average of all of a student's grades for all semesters and courses completed up to a given academic term

Study and Exam Regulations

1. **Study System:**

a. The study system at the university is based on levels.

b. The study consists of eight levels.

c. The duration of the study in a level is one semester.

d. The academic year is divided into two semesters. There may be a summer semester in which its duration is calculated as half of the term.

2. Study Load:

The academic load is the sum of the academic hours of the courses recorded by the student in the semester and is determined according to the following rules:

a. Minimum Load:

The minimum academic load is 12 credit hours in the semester and one hour in the summer semester.

b. Maximum Load:

The maximum academic load is 20 credits per semester and 10 credits per summer semester taking into account the following:

Academically Warned students may not exceed their academic load for more than 14 hours.

A student with an acceptable grade may not have more than 16 hours of work.

A graduate student is allowed to exceed the maximum limit by no more than three credit hours.

3. **Registration**:

- Students are allowed to register or delete courses they wish to study according to the following system:
- Students can add courses they wish to study one week before the beginning of the semester and maximum till the end of the first week.
- Students can drop courses they do not want to study up to the end of the second week of the beginning of the semester.
- The registered hours must not exceed the maximum study load and not less than the minimum.
- Registration of courses is done after consultation with the academic advisor. The student is responsible for any deficiencies or errors that occur as a result of his ignorance of the instructions.
- If the student does not register in any course during the regular registration period, he/she will be considered forfeited from studying.
- In case of automatic enrollment, the student must approve his schedule through his profile in the university computer system.
- The student is considered to be suspended from the study. If he did not approve his schedule during the period of dropping/adding courses until the end of the second week of the beginning of the semester.

4. Postpone the Study

The student may, before attending his academic level, apply for postponement of the study for an excuse accepted by the College Council. This happens providing that the period of postponement does not exceed two consecutive semesters or three non-consecutive semesters as a maximum during his stay at the University. The period of postponement will not be counted within the period required to complete the graduation requirements.

5. Regularity and Prevention of Study

- A regular student must attend lectures and practical lessons, and he/she is forbidden to enter the final exam if the attendance rate is less than (75%) of the lectures and practical lessons specified for each course during the semester. A student who has been deprived of taking the exam due to absence is considered that he failed the course.
- A student who is absent from the final exam shall have a grade of zero in that test. In that regard, his total mark is calculated on the basis of the quarterly grades obtained.
- If the student is unable to attend the final exam for any of the courses based on a compulsory excuse, the College Board may accept his excuse in case of extreme necessity, and allow him to be given an alternative test provided that the student submits his excuse on his test absence from the time of the excuse until the end of the second week of the end of the tests. The student is given the grade he/she receives after taking the alternative test.

6. Withdrawal from a Course

Upon the approval of the Dean or his authorized representative, the student may withdraw with an excuse from a decision in the semester within eight weeks of commencement of the study and four weeks for the summer semester provided that the study load is not less than the minimum.

7. Dropping a Semester

- The student may apologize for continuing to study a semester without being considered a failure if he submits an acceptable excuse to the College Board. , From the beginning of the semester until at least three weeks before the start of the final exams, and this chapter is calculated from the time required to complete the graduation requirements.
- If the apologized or deferred student returns to resume his studies on time, he shall apply to the Dean of Admission and Registration for a decision.
- The semesters dropped should not exceed two semesters during the student's university study otherwise the student's enrollment will be canceled.

8. Academic Warnings

The student gets the first academic warning if his cumulative GPA is below the minimum of (2.00) from (5.00). If the student receives three consecutive academic warnings because his cumulative average is below the minimum, he will be suspended academically.

9. Suspended Student

- If a regular student drops out of the study without an acceptable excuse for a semester without requesting a postponement to be entered from the university. The University Council may suspend the student if he interrupts his studies for less than that as well.

- If the student has not resumed his study in the specified time, or the Dean of Admission and Registration did not issue a decision to enroll him.
- The student enrollment is cancelled for those students who didn't register, if he did not address his academic status before the end of the seventh week of study.

10. Re-enrollment

The applicant can apply for re-enrolling to the Dean of Admission and Registration with his ID number and his record that he had before his absence according to the **following controls:**

a. To apply for re-enrolment to the Dean of Admission and Registration within four semesters from the date of registration.

b. The College Board and the relevant authorities must approve the re-enrollment of the student.

c. If the student has been enrolled for four semesters or more, he/ she can apply to the University as a new student without reference to his/her previous record provided that all the admission requirements stated in time are met.

d. Re-enrollment of the student is not allowed more than once.

e. Re-enrollment of the student who has been cancelled his enrolment shall not be registered if he is dismissed academically.

f. The student shall not be re-enrolled in the semester which he has entered.

g. A student who has been dismissed from the university for educational or disciplinary reasons or who has been dismissed from another university for disciplinary reasons may not be re-enrolled.

11. Dismissal from the University

The student shall be dismissed from the university in the following cases:

1. If he receives three consecutive alarms for his cumulative GPA being below (2.0 out of 5).
2. If he does not complete the graduation requirements within a maximum period of half of the period prescribed for graduation in addition to the duration of the program.
3. If the student does not complete the graduation requirements within a maximum of eight semesters, the College Board may give an exceptional opportunity.
4. If it becomes apparent that the student is not serious about his failure to do so, the College Council may terminate his registration.

12. Graduation

The student graduates after the completion of the requirements of success according to the study plan provided that the cumulative average is not less than acceptable (rate 2).

13. Deprivation of Reward

The student shall be deprived of the reward in the following cases:

1. In case the student's GPA is less than (2) for non-scholarship students.
2. If requested to postpone the study.
3. If the statutory period of study expires for non-scholarship students.
4. If he withdraws or is dismissed from the university.
5. If working in an official job.

14. Student Offenses that Deserve Discipline

- Any statement or act that affects honor and dignity or violates good conduct, conduct and integrity in religion and ethics inside and outside the university.
- The masterminded refraining from attending lectures, lessons, or other work at the college.
- Any cheating in the test, attempts to cheat, planning to cheat, or carrying material related to cheating even if not used.
- Misuse of college premises and accessories.
- Any organization formed within the college without a previous license from the competent authorities in the university.
- Any breach to the testing system, or to its required environment by causing noise and a like stuff.
- Issuing or distributing brochures or collecting funds or signatures before obtaining a license from the competent authorities in the university.
- A student taking a test in place of others or others taking a test in place of himself whether inside or outside the college.
- Smoking inside the university or not maintaining hygiene.
- Not sticking with decency in dealing with colleagues, employees, faculty, or workers of companies operating within the university or encroaching on them by word or deed.

15. Disciplinary Penalties for Students

- A written notice.
- A Warning.
- Depriving the student from enjoying some or all of the university benefits of the students.
- Denial of enrollment in one or more courses for one or more semesters.
- Cancellation of the student registration for a semester and his failure in the courses recorded.
- Cancellation of the student's test in one or more courses and failure in the course or courses that have been canceled.
- Depriving the student from taking the exam in one or more courses.
- Suspension from the University for one semester or more.

- Permeant suspension from the university.
- In all cases, the student shall bear the cost of the damage, plus the cost of repair or installation and the consequences thereof. It is not allowed that the student argues that he was not aware of the University's regulations and loyalty and the instructions it issues.

16. Transferring from University

First: From University to University:

A student from outside the University may be admitted according to the following rules:

1. The student must have studied at a college or university recognized by the Ministry of Higher Education for at least one semester.
2. The student should not be considered with a failing GPA.
3. The student should not to have been dismissed from the university transferred from for any disciplinary or academic reasons.
4. The transfer shall not be from a scientific degree to a higher degree.
5. The number of units required for transferring a student to study at Qassim University should not be less than 60% of the number of units required to obtain a Bachelor degree from the University.
6. The student can equalize 40% of the credit hours of the approved plan for the specialization that he is transferring to.
7. The grades obtained by the student in the courses equalized for him shall not be included in the calculation of his/her cumulative average. (The student is transferred during any semester from one university to another according to the procedures and dates announced in the university to which he is transferred to in light of the general rules of transfer)

Second: Transfer from One College to Another within the University:

The transfer of a student from one college to another within the university is in accordance with the following controls:

1. Approval of the Deanship of the College referred to it in accordance with the rules set by the College Council.
2. The student should not have spent more than four semesters.
3. The transfer procedures should be completed during the first week of the semester according to the academic calendar.
4. The student is not transferred until after at least one semester has passed in the college from which he was transferred.
5. A student is allowed to transfer once during his/her university studies or twice if one of them is in the preparatory year.

6. The student transferred to the preparatory year shall be returned to the division of the former in the event that he has not passed it only once.
7. Specializing after passing the preparatory programs shall not be considered in the transfer process. (All the courses that a student studied in his previous academic levels shall be included in his/her academic record when transferring from one college to another.

Third: Transfer from one Specialty to another within the College:

1. After the approval of the dean of the college, the student may, transfer from one major to another within the college in accordance with the rules set by the dean.
2. The remaining period of his university years should be sufficient to complete the graduation requirements.
3. Transfer procedures should be completed during the first week of the semester according to the academic calendar.
4. The student is allowed to transfer once during his university studies.

17. Visiting Student

A student who studies some courses in another university or college or in a branch of the university to which he belongs.

First: A student from the college who wishes to study as a visitor at another university or college:

1. The student must have an academic record (cumulative grade point average) for at least one semester at the university before applying for studying as a visiting student.
2. The student should have been studying in a recognized university or college.
3. The student should bring a description of the courses to be studied from the other university to be equated by the college and after determining the equivalent materials to be submitted by an official letter to the Deanship of Admission and Registration to address the university where he would like to study as a visiting student.
4. The course to be studied by the student outside the university should be equalized in the vocabulary and the number of units of study.
5. The maximum number of credits that can be calculated from outside the university for a visiting student is (20%) of the total graduation units from Qassim University.
6. Course rates that are equivalent to a visiting student at another university are not counted within their cumulative GPA, and the courses are recorded in their academic record.
7. The student must provide the Deanship of Admission and Registration with the results obtained within a week of the start of study in the first semester following the period of study as a visitor.
8. The maximum number of semesters a student is allowed to study as a visitor are two semesters.

Second: Another university student who wishes to study as a visitor in the college at Qassim University:

1. The student should take a description of the courses that he would like to study from the college within the university to be equated by his university.
2. The course to be visited by the visiting student is equivalent or (equivalent) in his vocabulary and the number of units of study.
3. To obtain the approval of the College to study these subjects.
4. The courses should be registered for the student by the competent authority in the Deanship.
5. At the end of his studies, the student shall be provided with a letter explaining the results of the courses he/she has studied.

Grades and Graduation

Grades and Graduation

The grades obtained by the student in each course shall be calculated on the basis that the grading weight is (5) points as follows:

Percentage	Grade	Letter Grade	Point Grade from (5)
95 - 100	High Excellent	A+	5.0
90 - 94	Excellent	A	1.75
85 - 89	High Very Good	B+	4.5
80 - 84	Very Good	B	1.0
75 - 79	High Good	C+	3.5
70 - 74	Good	C	3.0
65 - 69	High Pass	D+	2.5
60 - 64	pass	E	2.0
Less than 60	Fail	F	1.0

The overall grade point average when a student graduates based on his/her GPA is as follows:

1. (Excellent): If the GPA is not less than 4.50 out of 5.
2. (Very Good): If the GPA of 3.75 to less than 4.50 out of 5.
3. (Good): If the GPA is from 2.75 to less than 3.75 from 5.
4. (Acceptable): If the grade point average is from 2.00 to less than 2.75 from 5.

First class honors are awarded to students with a cumulative GPA of (4.75) to (5.00) out of (5.00) upon graduation. The second class honors are awarded to a student who has a cumulative GPA of 4.25 to less than 4.75 out of 5.00 upon graduation. For the first or second honors, the following conditions are required:

a. The student should not have failed any course he studied at the university or at another university.

b. The student must have completed the graduation requirements within a maximum period of twelve semesters.

c. The student must have studied at least 60% of the graduation requirements.

The student graduates after successfully completing the graduation requirements according to the study plan. GPA should not be less than the acceptable (GPA) which is 2

Re-correction of exams

Re-correction of exams

1. A student who has an objection to the final test score shall submit a request to re-correct his / her answer papers within two weeks from the date of the announcement of the final test result. The application shall be submitted to the department teaching the course, the application shall be entered into the academic system and shall be given notice thereof (the attached form of the request for re-correction shall be used).
2. The head of the department informs the student of his answer sheet and compares it with the key answers to the test.
3. In case the student is not convinced of the accuracy of the test correction, the head of the department forms a committee consisting of two faculty members in the department, not including the course instructor. The committee shall submit a report to the head of the department to decide whether to amend the student's grade or to reject the application.
4. In case the student is not convinced, the student may appeal to the College Board against this decision for two weeks from the date of notification. The grievance shall be formally presented to the Dean of the College, including the reasons and justifications for submitting it, and an undertaking from the student to the validity of the information provided. A statement from the Deanship of Admission and Registration of applications for re-correction previously submitted by the student, if any, and the decisions taken therein.
5. In case the College Council is not convinced of the seriousness and adequacy of the reasons for the grievance, it shall issue a reasoned decision to preserve it.
6. In the event that the College Council approves the correction, it shall form a committee of at least three faculty members, one of whom shall be from outside the department. The committee submit its report to the Council within fifteen days from the date of its decision. It shall be submitted to the Board for decision at the next first sitting.
7. The councils of colleges may add what they see without exceeding rule 39 of the list of study and tests of the regulation of the Higher Education Council and its executive base from Qassim University.

Curriculum structure

No	Program Structure	Required/ Elective	No. of courses	Credit Hours	Percent age
1	Institution Requirements	Required	6	12	6.67
		Elective	0	0	0
2	College Requirements	Required	0		
		Elective	0		
3	Program Requirements	Required	48	124	68.89
		Elective	4	8	4.44
4	Capstone Course/Project	0	0	0	0
5	Field Experience/ Internship	Required	1	30	16.67
6	Others	Free	3	6	3.33
	Total		**NA**	**180**	100

List of all courses divided according to different levels in the program

Level (1)

المتطلب	توزيع الدرجات الدراسية				Course Title	Code/No
	معتمد	تدريب	عملي	نظري		
-	1	0	0	1	Introduction to Pharmacy Profession	PHP111
-	2	0	0	2	Organic Chemistry	PHC111
-	4	0	1	3	Human Anatomy and Histology	ANAT111
-	3	0	1	2	Physiology (1)	PHG111
-	3	1	0	2	Mathematics for Pharmacy	MATH135
-	2	0	0	2	Introduction to Islamic Culture	IC101
-	2	0	0	2	Arabic Language Skills	ARAB101
-	2			2	Free course	
	19	1	2	16	المجموع	

Level (2)

المتطلب	توزيع الدرجات الدراسية				Course Title	Code/No
	معتمد	تدريب	عملي	نظري		
111 كمض	3	0	1	2	Pharmaceutical Analytical Chemistry	PHC121
111 كمص	4	0	1	3	Pharmaceutical Organic Chemistry	PHC112
-	3	0	1	2	Pharmaceutical Microbiology	PHT111
111 دوي	2	0	0	2	Physiology (2)	PHG112
111 سلم	2	0	0	2	Islam and Community Building	IC102
-	1	0	0	1	Foundations of Pharmacy Practice (1)	PHP112
-	2	0	0	2	Expository Writing	ARAB103
-	2	.	.	2	Free course	
	19	0	3	16	المجموع	

Level (3)

المتطلب	توزيع الدرجات الدراسية				Course Title	Code/No
	معتمد	تدريب	عملي	نظري		
-	3	0	1	2	Biochemistry	PHG 221
135 ريض	3	0	1	2	Pharmaceutics (1)	PHT221
111 كمص	3	0	1	2	Pharmacognosy	PHC 231
112 دوي	1	0	0	1	Introduction to Pathophysiology	PHP 251
112 مصد	2	1	0	1	Foundations of Pharmacy Practice (2)	PHP 213
111صيد	1	0	0	1	Immunology	PHG 231
-	2	0	0	2	Economic System in Islam	IC 103
112 كمص121 كمص	3	0	1	2	Principals of Medicinal Chemistry	PHC 241
	18	1	4	13	المجموع	

Level (4)

المتطلب	توزيع الدرجات الدراسية				Course Title	Code/No
	معتمد	تدريب	عملي	نظري		
221 صيد	3	0	1	2	Pharmaceutics (2)	PHT 222
213 مصد	2	1	0	1	Foundations of Pharmacy Practice (3)	PHP 218
221 صيد	2	1	0	1	Pharmacokinetics	PHT 231
-	2	0	0	2	Foundations of the Islamic Political System	IC 104
112 دوي	3	0	1	2	Introduction to Pharmacology	PHG 241
218 مصد	2	1	0	1	Self-care and OTC Therapeutics	PHP 221
135 ريض	2	1	0	1	Evidence-based Practice (1)	PHP 231
216 مصد221 مصد	1	1	0	0	Introductory Pharmacy Practice Experience (1)	PHP 281
-	2	0	0	2	Free course	
	19	5	2	12	المجموع	

Level (5)

المتطلب	توزيع الدرجات الدراسية				Course Title	Code/No
	معتمد	تدريب	عملي	نظري		
دوي 241	3	1	0	2	Toxicology	PHG 350
251 مصد	1	0	0	1	Patient Assessment Skills	PHP 352
251 مصد241 كمص241 دوي	6	1	0	5	Integrated Pharmacotherapy:Cardiovascular	PHP 361
251 مصد241 كمص241 دوي	4	1	0	3	Integrated Pharmacotherapy:Respiratory and Immunology	PHP 362
	2	0	0	2	Elective course	
218 مصد	2	1	0	1	Foundations of Pharmacy Practice (4)	PHP 319
-	1	1	0	0	Interprofessional Education	PHP 371
	19	5	0	14	المجموع	

Level (6)

المتطلب	توزيع الدرجات الدراسية				Course Title	Code/No
	معتمد	تدريب	عملي	نظري		
231 مصد	2	1	0	1	Evidence-based Practice (2)	PHP 332
251 مصد241 كمص241 دوي	5	1	0	4	Integrated Pharmacotherapy: Endocrinology and Gynecology	PHP 363
251 مصد241 كمص241 دوي	5	1	0	4	Integrated Pharmacotherapy:Infectious Diseases	PHP 321
251 مصد241 كمص241 دوي	4	1	0	3	Integrated Pharmacotherapy:Nephrology/Urology	PHP 364
281 مصد 215 مصد	1	1	0	0	Introductory PharmacyPractice Experience (2)	PHP 382
	2	0	0	2	Elective course	
	19	5	0	14	المجموع	

Level (7)

Code/No	Course Title	توزيع الدرجات الدراسية				المتطلب
		نظري	عملي	تدريب	معتمد	
PHP 441	Applied Pharmacokinetics	1	0	1	2	135 ريض 231 صيد
PHP 465	Integrated Pharmacotherapy: Neurology	3	0	1	4	251 مصد 241 كمص 241 دوي
PHP 466	Integrated Pharmacotherapy:Psychiatry	2	0	1	3	251 مصد 241 كمص 241 دوي
PHP 427	Integrated Pharmacotherapy:Hematology/Oncology	3	0	1	4	251 مصد 241 كمص 241 دوي
PHP 434	Graduation Project	0	2	0	2	231 مصد 112 مصد
PHP 491	Pharmacoepidemiologyand Medication Safety	1	0	0	1	231 مصد 315 مصد
PHP 492	Pharmacoeconomics	1	0	0	1	231 مصد 135 ريض
	Elective course	2	0	0	2	
	المجموع	13	2	4	19	

Level (8)

Code/No	Course Title	توزيع الدرجات الدراسية				المتطلب
		نظري	عملي	تدريب	معتمد	
PHP 417	Pharmacy Law	1	0	0	1	112 مصد
PHP 467	Integrated Pharmacotherapy:Dermatology/EENT	2	0	1	3	251 مصد, 241 كمص 241 دوي
PHP 468	Integrated Pharmacotherapy:GIT/Nutrition	3	0	1	4	251 مصد, 241 كمص 241 دوي

المتطلب	توزيع الدرجات الدراسية				Course Title	Code/No
	معتمد	تدريب	عملي	نظري		
251 مصد, 241 كمص 241 دوي	2	1	0	1	Integrated Pharmacotherapy:Critical Care/ Clinical Toxicology	PHP 424
251 مصد, 241 كمص 241 دوي	4	1	0	3	Integrated Pharmacotherapy:musculoskeletal	PHP 469
332 مصد	2	1	0	1	Evidence-based Practice (3)	PHP 433
	2	0	0	2	Elective Course	
	18	5	0	13	المجموع	

Internship year

عدد الساعات المعتمدة	Code/No.	Course Title
30	Internship year	PHP 483

Description of Courses taught in the Pharm D program

Level (1)

No	Course Title	Code/No.
1	Introduction to Pharmacy Profession	PHP 111
2	Organic Chemistry	PHC 111
3	Human Anatomy and Histology	ANAT 111
4	Physiology (1)	PHG 111
5	Mathematics for Pharmacy	MATH 135
6	Introduction to Islamic Culture	IC 101
7	Arabic Language Skills	ARAB 101
8	Free course	

Introduction to Pharmacy Profession

Course Name: Introduction to Pharmacy Profession	مقدمة في مهنة الصيدلة	إسم المقرر:
Course Code & No.: PHP111	PHP111	رقم المقرر ورمزه:
Credits: 1(1+0+0)hours	1(1+0+0)hours	عدد الساعات: المعتمدة:
Prerequisite: PHP120	PHP120	المتطلب: السابق:
Level: 1	1	المستوى:
Course type: Required	مطلوب	نوع الدورة:

Course Description

This course is designed to provide students with a broad perspective on pharmacy as a profession. Students will learn about pharmacy organizations and develop skills in identifying different dosage forms, the interpretation of prescriptions and pharmacy information sources.

2. Course Main Objectives

This course aims to introduce students to:

- Overview of Pharmacy Profession.
- Introduction to drug development, route of administration of drug delivery, dosage forms of pharmaceuticals and prescription and medication order interpretation
- Quality assurance in pharmacy and information about the different drug resources.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Describe the basic principles of drug development, medication dosage forms and their advantages and disadvantages	Traditional class room teaching, audio-visual learning	Midterm exams, final exam, short notes, MCQ's

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Define the history and philosphy of pharmacy profession	Traditional class room teaching, audio-visual learning	Midterm exams, final exam, short notes, MCQ's
3.1	Describe route of administration in drug delivery and prescription interpretation.	Traditional class room teaching, audio-visual learning	Midterm exams, final exam, short notes, MCQ's
3.2	Outline different sources of medication information, functions of SFDA and quality care concept in pharmacy	Traditional class room teaching, audio-visual learning	Midterm exams, final exam, short notes, MCQ's
3.3	Introduction to quality assurance concepts in pharmacy	Traditional class room teaching, audio-visual learning	Midterm exams, final exam, short notes, MCQ's

4. Course Content

No	List of Topics	Contact Hours
1	Overview of Pharmacy Profession	1
2	Pharmacy history and philosophy	1
3	Pharmacy organizations	1
4	Drug development	2
5	SFDA roles and functions	2
6	Dosage forms of pharmaceuticals	2
7	Routes of administration in drug delivery	1
8	Interpretation of medication orders and prescriptions	2
9	Introduction to quality assurance concepts in pharmacy	1
10	Pharmacy information sources	2
	Total	15

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	15
2	Laboratory/Studio	---
3	Tutorial	---
4	Others (specify)	---
	Total	15

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid Term		30%
2	Final Exam		50%
3	Assignment		20%

7. Learning Resources

1	Required Textbooks	• Pharmacy : an introduction to profession by L. Michael Posey, 2nd Edition • Foundation in Pharmacy Practice by Ben Whalley • Saudi Food andDrug Administration guidelines.
2	Essential References Materials	None
3	Electronic Materials	• http://www.library.qu.edu.sa/Pages/default.aspx • http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about • http://accesspharmacy.mhmedical.com/ss/About.aspx • http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx • http://search.proquest.com/
4	Other Learning Materials	Instructor handouts

Organic Chemistry

Course Name: Organic Chemistry	الكيمياء العضوية	إسم المقرر:
Course Code & No.: PHC 111	PHC 111	رقم المقرر ورمزه:
Credits: 2(2+0+0)	(2+0+0)2	عدد الساعات: المعتمدة:
Prerequisite: None	None	المتطلب: السابق:
Level: 1	1	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course will cover the fundamentals of organic chemistry, which includes:
(i) Structure of Atoms, Sub-atomic particles, Electronic configuration, writing of electronic configuration, atomic orbitals, hybridization and its role in determination of shape and structure for organic molecules, Chemical bonds, Electronegativity, Inductive effect, Resonance effect, Mesomeric effect, Hypercoonjugation, polarity and its origin, reaction intermediates, arrows in chemistry.
(ii) Isomerism (structural: Chain isomerism, Positional isomerism, Functional Group isomerism, Metamerism, Tautomerism, Ring chain isomeris, and Stereoisomerism: conformational isomerism, configurational isomerism, optical isomerism, enantiomerism, chirality, achirality, diasteromerism and mesomerism), the course will also explain the importance of stereochemistry in drug action.
(iii) IUPAC nomenclature, reaction and properties of hydrocarbons (alkanes, alkenes, alkynes) and functional group containing organic compounds, alkyl halides, alcohols, ethers and epoxides

2. Course Main Objectives

The course is designed to provide the knowledge required to succeed in pharmaceutical organic chemistry, Medicinal Chemistry and pharmaceutical analytical chemistry courses
The main aim of this course is:
(i) Student will be able to know the structure of atom, sub-atomic particles, atomic mass and atomic number
(ii) Students will be able to know the valency and hybridization
(iii) Students will be able to recognize and identify organic compounds based on various functional groups and their chemical characteristics.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Recognize hybridization, geometry and three-dimensional structure of organic molecules and functional groups	Lectures	MCQs, short notes
2.0	Skills		
2.1	Write the chemical reactions and transformations of functional group	Lectures	MCQs, short notes
3.0	Values		
…			

4. Course Content

No	List of Topics	Contact Hours
1	Introduction (Atoms, sub-atomic particles and their properties, Electronic Configuration, Atomic Orbitals	3
2	Hybridization, Chemical Bonding, Lewis Structure, Resonance	3
3	Inductive effect, Mesomeric effect, hyperconjugation, Elctronegativity, Reaction Intermediates, polarity and Nomenclature	3
4	Alkanes and cycloalkanes, Structure, Physical and Chemical Properties Methods of Preparation and Chemical Reaction (Free radical Reaction)	3
5	Stereochemistry (Optical isomerism– Optical activity, Enantiomerism, Diastereoisomerism, meso compounds, Elements of symmetry, Chiral and achiral molecules, DL system of nomenclature of optical isomers, sequence rules, RS system of nomenclature of optical isomers.Geometrical isomerism- Nomenclature of geometrical isomers (Cis-Trans, E-Z, systems). Methods of determination of configuration of geometrical isomers. Conformational isomerism in Ethane, n-Butane and Cyclohexane. Stereo isomerism in biphenyl compounds (Atropisomerism) and conditions for optical activity.	3
6	Optical Isomerism	3
7	Alkenes, Structure, Physical and Chemical Properties Methods of Preparation and Chemical Reaction (Electrophilic addition Reactions)	3
8	Alkyl Halides and Alcohols, Physical and Chemical Properties Methods of Preparation	3

9	Chemical Reaction (Nucleophilic Substitution and Nucleophilic Elimination reactions)	3
10	Ethers, Epoxides and their Sulfur Analogues Physical and Chemical Properties Methods of Preparation and Chemical Reaction (Nucleophilic Substitution and Nucleophilic Elimination reactions)	3
	Total	15

5. Contact Hours (based on academic semester)

No	Lecture	Contact Hours
1	Laboratory/Studio	30
2	Tutorial	---
3	Others (specify) Self-Study	---
4	Others (specify)	60
	Total	90

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm I	5	30%
2	Assignment	7	10%
3	Quizzes	9	10%
	Final Exam	15	50%

7. Learning Resources

1	Required Textbooks	W. Graham Solomon, Organic Chemistry, John Wiley & Sons, Inc, Robert T. Morrison, Robert N. Boyd, Organic Chemistry, 6th Edition Ralph J. Fessenden, Organic Chemistry, Brooks Cole.I. L. Finar, Organic Chemistry: The Fundamental Principles, John Wiley & Sons
2	Essential References Materials	Journal of chemical education, ACS Publications
3	Electronic Materials	https://www.khanacademy.org/science/organic-chemistryhttp://www.chemguide.co.uk/orgmenu.html http://www.library.qu.edu.sa/Pages/default.aspx
4	Other Learning Materials	Computer-based programs, Chemdraw

Human Anatomy and Histology

Course Name: Human Anatomy and Histology	تشريح الإنسان وعلم الأنسجة	إسم المقرر:
Course Code & No.: ANAT 111	شرح 111	رقم المقرر ورمزه:
Credits: 4 (3+1+0)	(3+1+0) 4	عدد الساعات:
Prerequisite: None	لايوجد	المتطلبات المسبقة:
Level: 1	1	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course is intended to introduce the student to the basic knowledge regarding the structural anatomy and histology of the various body systems and organs. The relation between the various systems and organs will be outlined and discussed. Students will also be introduced to the basics of cytology, general histology and organo-histology of the human body systems. In the practical classes, the students will be using simulated plastic human models to implement what is taught in the theoretical lectures.

2. Course Main Objective

- The student should be introduced to the basic knowledge regarding the structural anatomy and histology of the various body systems and organs.
- The student should learn how to outline and discuss the relation between the various systems and organs.
- Students will also be introduced to the basics of cytology, general histology and organo-histology of the human body systems.
- In the practical classes, students will learn how to use the simulated plastic human models and the microscope to implement what is taught in the theoretical lectures.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Recognize the locations and the general anatomical structures of various body organs	Lectures	MCQs, short notes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Explain the relations between the different organs and various systems of the body (the central nervous system, the autonomic nervous system, the cardiovascular system, the respiratory system, the gastrointestinal tract, the renal and urinary system, the reproductive system, the sensory organs, the lymphatic system and the musculoskeletal system	Lectures	MCQs, short notes
1.3	Memorize the basic anatomical and histological features of the different organs and various systems of the body (the central nervous system, the autonomic nervous system, the cardiovascular system, the respiratory system, the gastrointestinal tract, the renal and urinary system, the reproductive system, the sensory organs, the lymphatic system and the musculoskeletal system as well as the histological features of the skin and skin appendages	Lectures	MCQs, short notes
1.4	Describe features of the cell membrane, cytoplasmic organelles and inclusions, and list their functions. List phases of the cell cycle and describe each and classify cells according to renewal capabilities	Lectures	MCQs, short notes
1.5	Differentiate between meiosis and mitosis	Lectures	MCQs, short notes
1.6	Classify body tissues and differentiate between the types tissues	Lectures	MCQs, short notes
2.0	Skills		
2.1	Demonstrate ability to use the compound light microscope effectively and describe the microscopic appearance of the nucleus and cytoplasm of eukaryotic human body cells	Lectures	MCQs, short notes
2.2	Demonstrate ability to use the simulated plastic human models and describe the anatomical structure of the body organs	Lectures	MCQs, short notes
3.0	Values		
3.1	Evaluate own learning and performance, make decisions regarding self-development and practice reflective and independent thinking to effectively manage and respond to routine or unanticipated circumstances.	Lectures	survey

4. Course Content

No	List of Topics	Contact Hours
1	General Anatomy; and Cytology 1 (cell membrane and organelles)	7.5
2	Anatomy of Bones – Muscles and Cytology2 (nucleus, cell cycle and genetics)	7.5
3	Anatomy of Joints; and Histology of Epithelium (lining and glandular), Connective tissue (cells and fibres)	7.5
4	Anatomy of Digestive, Respiratory & Endocrine systems; and Histology of Cartilage and bone	7.5
5	Anatomy of Nervous system; and Histology of Muscular and nervous	7.5
6	Anatomy of Cardiovascular& lymphatic systems; and Histology of Blood and blood vessels	7.5
7	Anatomy of Male genital system - Urinary system; Histology of Lymphatic organs	7.5
8	Anatomy of Female genital system; Histology of GIT, general structure and epithelial lining, liver, gall bladder, salivary glands (types), pancreas	7.5
9	Anatomy of Special senses; Histology of Male genital system	7.5
10	Histology of Female genital system	7.5
Total / Theoretical and laboratory		75

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	45
2	Laboratory/Studio	30
3	Tutorial	
4	Others (specify): Learning hr	
	Total	75

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	8-6	30 %
2	Practical Exam	11	20 %
3	Final Exam	11-12-13	50 %

7. Learning Resources

1	Required Textbooks	Patton. Anatomy and Physiology. 10th edition.Human Anatomy and Physiology. (Benjamin/Cummings Series in the Life Sciences)
2	Essential References Materials	http://accesspharmacy.mhmedical.com/ss/About.aspx https://sdl.edu.sa/SDLPortal/ar/Publishers.aspx
3	Electronic Materials	None
4	Other Learning Materials	None

Physiology-I

Course Name: Physiology-I	علم وظائف الأعضاء-1	إسم المقرر:
Course Code & No.: PHG111	دوي 111	رقم المقرر ورمزه:
Credits: 3 (2+1+0)	(2+0+0) 2	عدد الساعات:
Prerequisite: None	لايوجد	المتطلبات المسبقة:
Level:1	1	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

- Physiology of cell membrane, nerve and muscle,
- Physiology of autonomic nervous system,
- Physiology of blood and cardiovascular system with emphasis on the human body.

2. Course Main Objective

- Describe the importance and understanding of various physiological processes of the human body.
- Perform various experiments relating to the various body systems.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Describe resting and action membrane potential and how an equilibrium potential is produced	Lectures	MCQs, short notes
1.2	Describe the structure and general functions of the sympathetic and parasympathetic divisions of the autonomic system and role of motor unit in control of muscle contraction	Lectures	MCQs, short notes
1.3	Describe blood composition, function of the heart and regulation of its function	Lectures	MCQs, short notes
1.4	Recall the structure and function of smooth muscle	Lectures	MCQs, short notes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Differentiate between different types of muscles and contractions	Lectures	MCQs, short notes
2.2	Perform various experiments relating to cardiovascular system, blood	Lectures	MCQs, short notes
3.0	**Values**		
3.1	Evaluate own learning and performance, make decisions regarding self-development and practice reflective and independent thinking to effectively manage and respond to routine or unanticipated circumstances.	Lectures	survey

4. Course Content

No	List of Topics	Contact Hours
1	Lecture: Basic aspects of physiology I Objectives:· • To describe functional organization of the human body. • To describe the composition of human body Lecture: Basic aspects of physiology II Objectives:· • To describe the body fluid compartments. • To understand the concept of homeostasis	4.5
2	Lecture: Blood physiology I Objectives: • To understand composition and functions of blood. • To describe the characteristics and functions of plasma Lecture: Blood physiology II Objectives: To describe the functions of the different types of cells found in the blood (RBCs, WBCs and platelets)	4.5
3	Lecture: Blood physiology III Objectives: • To describe the basis of blood groups classification:\ -ABO system- - Rh system Lecture: Blood physiology IV Objectives: • To understand the mechanisms of hemostasis: • Vascular spasm • Formation of a platelet plug • Blood coagulation	4.5

No	List of Topics	Contact Hours
4	Lecture: Transport across cell and capillary membranes Lecture: Cell Membrane Electrophysiology • Objectives: Transport across cell membrane, Transport across capillary membrane, Resting membrane potential, Local potential, and Action potential	4.5
5	Practical: Blood physiology I Objectives: • Osmotic fragility test, ESR • Hb Concentration and RBCs count • WBC count (total and differential) Practical: Blood physiology II Objectives: • Blood grouping • Bleeding time • Clotting time	4.5
6	Lecture: Physiology of synapses and neurotransmitters Objectives: • Types and properties of synapse • Types and properties of neurotransmitter Lecture: Muscle contraction Objectives: • Types and functions of muscles. • Functional organization of S. muscles • The mechanism of skeletal muscle contraction and relaxation. • Energy requirements of muscles. • Muscle twitch, clonus and tetanus· • Types of muscle contraction. • Differences between smooth, cardiac and skeletal muscle contraction	4.5
7	Lecture: Autonomic nervous system I Objectives: • Functional organization of the ANS. • Differences between the somatic and autonomic nervous system. • General organization of the sympathetic and parasympathetic systems. Lecture: Autonomic nervous system II Objectives: • To describe the main neurotransmitters and receptors of the sympathetic and parasympathetic systems. • To understand the function of the sympathetic and parasympathetic systems in the control of the viscera.	4.5
8	Lecture: CVS physiology I Objectives: • To describe functional organization of the cardiovascular system • To understand properties of cardiac muscle Lecture: CVS physiology II Objectives: • To understand events of cardiac cycle, heart sounds and ECG. • To outline main control mechanisms of cardiac output and venous return	4.5

No	List of Topics	Contact Hours
9	Lecture: CVS physiology III Objectives: • To outline main control mechanisms of blood pressure Lecture: CVS physiology IV Objectives: • To outline main local control mechanisms tissue blood flow (microcirculation). To describe physiology of special circulation	4.5
10	Practical: CVS physiology I Objectives: Blood pressure Practical: CVS physiology II Objectives: ECG	4.5
	Total / Theoretical and laboratory	45

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	
4	Others (specify): Learning hr	75
	Total	135

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam	8-6	30 %
2	Practical Exam	11	20 %
3	Final Exam	11-12-13	50 %

7. Learning Resources

1	Required Textbooks	Guyton, A.C. and Hall, J.E. Textbook of Medical Physiology. Latest edition. W.B. Saunders Company, Philadelphia. Additional suggested readings: Fox, 8.1. Human Physiology. W.C. Brown Publlshers. Latest edition. Dubuque. Ganong, W.F. Review of Medical Physiology. Latest edition. Appleton and Lange, Norwalk.
2	Essential References Materials	http://accesspharmacy.mhmedical.com/ss/About.aspx https://sdl.edu.sa/SDLPortal/ar/Publishers.aspx
3	Electronic Materials	None
4	Other Learning Materials	None

Level (2)

No.	Course Title	Code/No.
1	Pharmaceutical Analytical Chemistry	PHC 121
2	Pharmaceutical Organic Chemistry	PHC 112
3	Pharmaceutical Microbiology	PHT 111
4	Physiology (2)	PHG 112
5	Islam and Community Building	IC 102
6	Foundations of Pharmacy Practice (1)	PHP 112
7	Expository Writing	ARAB 103
8	Free course	

PharmaceuticalAnalytical Chemistry

Course Name: Pharmaceutical Analytical Chemistry	إسم المقرر: الكيمياء التحليلية الصيدلية
Course Code & No.: 121 PHC	رقم المقرر ورمزه PHC 121
Credits: 3 (2+1+0)	عدد الساعات : 3 (2+1+0)
Prerequisite: 111 PHC	المتطلبات PHC ١١١
Level: 2	المستوى 2
Course type: Required	نوع الدورة: مطلوب

1. Course Description

Pharmaceutical Analytical Chemistry, PHC 121: An Introductory Course in Analytical Chemistry for Pharmacy Graduates

"Analytical chemistry is a measurement science consisting of a set of powerful ideas and methods that are useful in determining the composition of chemical materials. The course will cover both chemical methods of analysis with emphasis on volumetric category and physicochemical methods of analysis, i.e., spectro-analytical instrumental methods. The course will cover the principle and applications of each method, its laws/working principle, calculation, advantages and limitations. More attention will be given to its application in the field of pharmaceutical analysis".

2. Course Main Objectives

Introduce students to analytical chemistry concepts, techniques and their uses in pharmaceutical analysis. The objectives will cover the followings:

- Understanding the analytical methods, tools, analytical quality control, validation, and statistical concepts in pharmaceutical analytical chemistry.
- Understanding the theory and practical aspects of acid, base, pH, buffer, titrations and different titrimetry.
- Understanding the spectroscopic methods of pharmaceutical materials analyses.
- Understanding the chromatographic techniques for pharmaceutical materials purification.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Understanding the analytical methods of titrimetry, spectroscopy and chromatographic, their tools in pharmaceutical analysis with the theory and practical aspects of acid, base, pH, pKa, and buffer in sample analysis.	LectureLab WorksContinuous Labs Assessment	MCQs, Short Notes and Short essays, Continuous Lab Assessments,
2.0	Skills		
2.1	Employ and Evaluate the spectroscopic and chromatographic techniques in sample's analysis.	LectureLab Works	MCQs, Short Notes and Short essays, Continuous Lab Assessments, .

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to Analytical Chemistry, Analytical Methods, Qualitative, Quantitative Analyses, Precision, Accuracy, Limit of Detection, Limit of Quantification, Standards, Impurity and Errors, Method and Test Validation.	2
2	Pharmacopoeia- Definition, US, British, European and International Pharmacopoeias, Saudi-FDA; Research Methods, Clinical Trials.	4
3	Acid and Bases, pH, pKa, pKb, pKw, Acid Base Strength, Conjugate Acid, Conjugate Base, Buffer Solution, Common Ion Effects.	2
4	Titrations- Definition, Indicators, Titrant, Anylate, Titration Curves, End Point, Equivalence Point, Titrimetry Calculations.	2
5	Types of Titrations-Acid-Base, Non-Aq. Acid and Base type, Precipitometric, Potentiometric, Complexometric, Redox Titrations, Oxidation, Reduction, Electrochemical Cell, Electrolytes, EMF, Reactions at Electrodes, Indicator-less Titrations, Calculations.	4
6	Electronic and Molecular Spectroscopy, Electromagnetic Spectrum, Electronic Excitations, UV, UV-Vis, and IR Spectroscopy, Florescence, Phosphorescence, Chem-luminescence and Bioluminescence, Fluorescence Spectroscopy.	4
7	NMR Spectroscopy, and Mass Spectrometry	6
8	Chromatography- Chromatographic Theories- Rate and Plate Theory, Stationary and Mobile Phases, Types of Chromatography, Liquid Chromatography, Column Chromatography, Solvent Systems, Gradient and Isocratic Mobile Phase Systems, Purifications and Rf Value, Paper and Thin Layer Chromatography.	2

No	List of Topics	Contact Hours
9	GC- Instrumentation, Working Principle, Injectors - Purge-less and Purged Injections, Column Types, Column Fillers, Interpretation of GC Spectra, Retention Time, Componential Analysis, Peak Spiking, Utility & Limitations of the GC Method.	2
10	HPLC- Working Principle, Instrumentation- Gradient Controller, Pumps, Injector and Automated Injections, Safety Column, Column Types, Detectors - Universal and Specific, Normal and Reverse Phase Analysis, Analytical and Bulk Columns, Interpretation of HPLC Chromatogram, Purifications - Isolation and Retention Time, Peak Resolution, Factors Influencing Separations, Utility and Limitations of the HPLC method, Peak Area & its Calculations, Material Quantitation and Componential Analysis.	2
Total		30

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	--
4	Others (specify):	--
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm	6	20 %
2	Assignment/Quiz	7	% 10
2	Continuous lab assessment	Weekly	10%
3	Final practical exam	11	10 %
4	Final exam	12	50 %

7. Learning Resources

1	Required Textbooks	• Fundamentals of Analytical Chemistry, Douglas A. Skoog and Donald M. West. Fourth edition, Sanders College Publishing, Philadelphia (2005). • Instrumental Methods of Chemical Analysis, Galen Ewing. 5th Edition. McGraw- Hill, New York. • Instrumental Analysis, Gary D. Christian and James E O'Reilly, 2nd ed. Prentice Hall, New York.
2	Essential References Materials	-Vogel's Textbook of Quantitative Inorganic Analysis, 4th ed. J. Bassett, R. C. Denney, G. H. Jeffery and J. Mendham, Longman, Essex (1978). - Modern Analytical Chemistry, David Harvey, McGraw-Hill, New York
3	Electronic Materials	• e-Books (provided to students) • Internet Based Materials available freely: -Chem-web-IUPAC web-portal • Online Resources available through Campus Connectivity: -Access Pharmacy-Pharmacy Library-Martindale: Complete Drug Reference
4	Other Learning Materials	Software based Computer prediction tools for spectroscopic absorption prediction required.

Pharmaceutical Organic Chemistry

Course Name: Pharmaceutical Organic Chemistry	الكيمياء العضوية الصيدلانية	إسم المقرر:
Course Code & No.: PHC 112	PHC 112	رقم المقرر ورمزه:
Credits: 4(3+1+0)	4(3+1+0)	عدد الساعات المعتمدة:
Prerequisite: 111 PHC	ص م أ 111	المتطلبات:
Level: 2	2	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course will continue covering the organic functional groups that were not covered in prerequisite course. This includes preparation, properties and reactions of (i) Aldehydes and ketones, (ii) Carboxylic acids and its derivatives, (iii) Aromatic compounds (iii) heterocyclic chemistry, and (iv) spectroscopic techniques. The completion of this course will prepare students for the medicinal chemistry and drug analysis included in the integrative courses of prescribed curriculum.

2. Course Main Objectives

This course is design to introduce students towards the advance level of organic chemistry building on the organic chemistry fundamentals (prerequisite course). The course also intent to introduce students towards the important role of organic reactions in medicinal and natural product chemistry. The course also aims to develop the knowledge and skills among the student:

(i) Students will be able to know the chemical transformations and synthetic strategies.

(ii) Student will be able to recognize heterocyclic ring systems and their pharmaceutical importance.

(iii) Student will be able to identify the various functional groups using chemical tests

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Recognize various chemical class and subclass, including its physical properties and chemical properties specific to the class, importance of heterocyclic ring systems in organic molecules of pharmaceutical importance	Lectures	MCQs, short notes
1.2	Describe different reactions, synthetic strategies along with the reaction mechanism	Lectures	MCQs, short notes
2.0	Skills		
2.1	To identify different functional groups by performing different chemical tests	Laboratory demonstrations, Discussion, Hands on session, Explanations	Practical Exams, Continuous student evaluation
3.0	Values		
…			

4. Course Content

No	List of Topics	Contact Hours
1	Aldehydes and Ketones, Nomenclature (IUPAC and Common names), and Structure, Physical and Chemical Properties,	4.5
2	Chemical Reaction (Nucleophilic addition Reactions)	4.5
3	Carboxylic Acids, Nomenclature (IUPAC and Common names) Structure, Physical and Chemical Properties, Methods of Preparation and Chemical Reactions	4.5
4	Carboxylic Acid Derivatives (Acid halides, Esters): Nomenclature (IUPAC and Common names) Structure, Physical and Chemical Properties, Methods of Preparation and Chemical Reactions (Nucleophilic Acyl Substitution Reactions)	4.5
5	(Anhydrides and amides): Nomenclature (IUPAC and Common names) Structure, Physical and Chemical Properties, Methods of Preparation and Chemical Reactions (Nucleophilic Acyl Substitution Reactions)	4.5
6	Aromatic compounds: (Concept of aromaticity, Huckel's Rule, Benzene and its Derivatives,) Nomenclature (IUPAC and Common names) Structure, Physical and Chemical Properties, Methods of Preparation and	4.5

No	List of Topics	Contact Hours
7	Chemical Reactions (Electrophilic Aromatic Substitution Reactions, Substituent Effects on the benzene ring, Nucleophilic substitution reactions, Reduction of Aromatic rings)	4.5
8	Phenol: Nomenclature (IUPAC and Common names) Structure, Physical and Chemical Properties, Methods of Preparation and Chemical Reactions	4.5
9	Amines: Structure, Classification, Nomenclature, Physical and chemical properties of amines, Methods of Preparation, Effect of substituents on the basicity of amines, Diazonium salts, Prepartion and reaction, reactions given by diazonium salts	4.5
10	Heterocyclic Chemistry: Nomenclature (IUPAC and Common names), Common heterocyclic rings of Pharmaceutical importance. Synthesis, Reactions and medicinal uses of following compounds/derivatives Pyrrole, Furan, Thiophene, Pyridine and Pyrimidine, Relative aromaticity and reactivity of Pyrrole, Furan, Thiophene, Pyridine and Pyrimidine	4.5
Total		45

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	45
2	Laboratory/Studio	30
3	Tutorial	
4	Others (Self Study)	105
	Total	180

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid term I	5	20
2	Quiz/Assignment	9	10
3	Final Practical Exam	10	10
4	Continous Assesment	2-10	10
5	Final Exam	12	50

7. Learning Resources

1	Required Textbooks	• W. Graham Solomon, Organic Chemistry, John Wiley & Sons, Inc, • Robert T. Morrison, Robert N. Boyd, Organic Chemistry, 6th Edition • Ralph J. Fessenden, Organic Chemistry, Brooks Cole. • I. L. Finar, Organic Chemistry: The Fundamental Principles, John Wiley & Sons
2	Essential References Materials	Journal of chemical education, ACS Publications
3	Electronic Materials	https://www.khanacademy.org/science/organic-chemistryhttp://www.chemguide.co.uk/orgmenu.html http://www.library.qu.edu.sa/Pages/default.aspx
4	Other Learning Materials	Lab Manuals,

Pharmaceutical Microbiology

Course Name: Pharmaceutical Microbiology	علم الأحياء الدقيقة الصيدلانية	إسم المقرر:
Course Code & No.: PHT 111	PHT 111	رقم المقرر ورمزه:
Credits:3 (2+1+0)	3 (2+1+0)	عدد الساعات:
Prerequisite: None	None	المتطلبات المسبقة:
Level: 2	2	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The course provides an overview of Basic and Medical microbiology. The study will be focused on the biological characteristics of different groups of microbes (Bacteria, Rickettsia, Mycoplasma, Chlamydia Viruses and Fungi) including classification, nomenclature, structure, nutrition, metabolism, cultivation, growth and genetics. In addition, study of etiological agents(s), mode of infection, pathogenesis, laboratory diagnosis, prevention control, and treatment of the most medically most important infectious diseases.

2. Course Main Objectives

The course aims to introduce students to:

1. To describe basic pharmaceutical microbiology focusing on the history of development of microbiology, the biological properties of different groups of microbes; their classification, nomenclature, structure, nutrition, metabolism, cultivation, growth and genetics.
2. To describe the difference between bacteria, viruses and fungi and their methods of culture and identification.
3. To explain concept of sterilization, antibiotics and their mechanism of action.
4. To explain the antimicrobial agents other than antibiotics and their methods of assay
5. To describe the mechanism of resistance against antibiotics.
6. To explain microbiological aspects of pharmaceutical processing

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	List the basic knowledge of bacteria, fungi, viruses and genetic microbiology.	Lectures	MCQs, short notes and short essays
1.2	Explain the different types of antibiotics and antimicrobial agent and the concept of sterilization	Lectures	MCQs, short notes and short essays
2.0		Skills	
2.1	Develop awareness of mechanisms of action of antibiotics and the methods of antimicrobial resistance.	Lectures	MCQs, short notes and short essays
2.2	Write on microbial genetics, and antimicrobial assay.	Lectures	MCQs, short notes and short essays
3.0		Values	
3.1	Demonstrate responsibility for own learning	Practical	Continuous lab evaluation Final practical examination
3.2	Demonstrate ability to participate in group work	Practical	Continuous lab evaluation Final practical examination
3.3	Examine different groups of microbe	Practical	Continuous lab evaluation Final practical examination
3.4	Perform cultivation, prepare smears, and examine them microscopically	Practical	Continuous lab evaluation Final practical examination
3.5	Operate different types of microbiological equipment in the lab. Perform work under aseptic conditions	Practical	Continuous lab evaluation Final practical examination

4. Course Content

No	List of Topics	Contact Hours
1	History of Microbiology and the world of microorganisms.	3.33
2	Bacterial metabolism, bacterial growth curve	3.33
3	Different groups of fungi (yeast, yeast-like fungi, filamentous and dimorphic fungi). Characteristics of viruses (morphology, classification, multiplication, cultivation, detection, etc.	3.33

No	List of Topics	Contact Hours
4	Sterilization	3.33
5	Antibiotics (classification and mechanism)	3.33
6	Mechanism of resistance to antibiotics and the genetic underline bases	3.33
7	Classification and mechanism of action of non-antibiotic antimicrobial agents.	3.33
8	Microbiological Aspects of Pharmaceutical Processing	3.33
9	Assay of antibiotics and antimicrobial agents	3.33
Total		30

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	--
4	Others (specify):	--
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm	6	30 %
2	Continuous lab assessment	Weekly	10%
3	Final practical exam	11	10 %
4	Final exam	12	50 %
5	Final Exam	12	50

7. Learning Resources

1	Required Textbooks	1. Hugo and Russell's. Pharmaceutical Microbiology, Stephen P Denyer, 8th Edition 2. Koneman, EW; Allen, SD and Janda, WM et al. "Color Atlas and Textbook of Diagnostic 3. Microbiology", Last edition, Lippincott Company, USA 4. Murray, PR; Baron, EJ; Pfaller, MA et al. "Manual of Clinical Microbiology", Last edition, ASM Press USA. 5. Black, JG "Microbiology Principles and Explorations", Last edition, John Wiley & Sons, Inc., USA 6. Colle, JG; Fraser, AG; Mannion, BP and Simmons, A "Mackie and McCartney, Practical Medical Microbiology" Last edition, Churchill Livingstone Inc., USA.
2	Essential References Materials	None
3	Electronic Materials	None
4	Other Learning Materials	None

Physiology-II

Course Name: Physiology-II	علم وظائف الأعضاء-2	إسم المقرر:
Course Code & No.: PHG112	دوي 112	رقم المقرر ورمزه:
Credits:2 (2+0+0)	2 (2+0+0)	عدد الساعات:
Prerequisite: PHG111	دوي 111	المتطلبات المسبقة:
Level:2	2	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course aims to introduce students to describe the importance and understanding of various physiological processes of the human body.

2. Course Main Objective

This course describes the physiological aspects of respiratory, renal, digestive and central nervous systems.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Describe the functions of different organs of respiratory system and their regulation of function	Lectures	MCQs, short notes
1.2	Describe the functions of different organs of digestive system and regulation of its functions	Lectures	MCQs, short notes
1.3	Describe the functions of different organs of renal system and regulation of its functions	Lectures	MCQs, short notes
1.4	Describe the functions of different organs of nervous system and regulation of its functions.	Lectures	MCQs, short notes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	Skills		
2.1	Differentiate the digestion and absorption of carbohydrates, lipids and proteins	Lectures	MCQs, short notes
2.2	Compare the location and functions of the sensory cortex and motor cor tex	Lectures	MCQs, short notes
2.3	Describe the flow of blood in the liv er and to explain the significance of the enterohepatic circulation	Lectures	MCQs, short notes
3.0	Values		

4. Course Content

No	List of Topics	Contact Hours
1	Lecture: GIT physiology I • Functional organization of the GIT • Deglutition • Functions of the mouth, stomach and intestines.	3
2	Lecture: GIT physiology II • Blood circulation of liver • Hepatobiliary functions • Functions of the pancreas • Digestion and absorption of carbohydrate, protein and fat	3
3	Lecture: CNS physiology I • Functional organization of the nervous system • Functions of spinal cord, brain stem and diencephalon Physiology of the sensory system • Sensory receptors· Sensory tracts • Sensory function of the cerebral cortex	3
4	Lecture: CNS physiology II Physiology of the motor system • Motor functions of the cerebral cortex • Motor functions of cerebellum and B. ganglia • Motor functions of pyramidal and extrapyramidal tracts	3

No	List of Topics	Contact Hours
5	Lecture: Respiratory physiology I • Functional organization of the resp. system • Mechanism of breathing • Lung's volumes and capacities • Pulmonary ventilation (alveolar vs dead space)	3
6	Lecture: Respiratory physiology II • Physiological determinants of pulmonary ventilation (airways resistance and pulmonary compliance) • Gas Exchange • Gas transport	3
7	Lecture: Respiratory physiology III • Control of breathing • Hypoxia • Cyanosis	3
8	Lecture: Renal physiology I • Functional organization of the renal system Glomerular filtration rate Renal blood flow	3
9	Lecture: Renal physiology II • Tubular functions Excretion of diluted/concentrated urine	3
10	Lecture: Renal physiology III • Micturition reflex • Role of kidney in regulation of acid base balance • Renal function tests • Mechanisms of action of diuretics	3
Total		30

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify): Learning hr	60
	Total	90

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm Exam (MCQs, Short notes, short essay)	8-7-6	30 %
2	Quiz (short notes, or MCQs)	8-10	10 %
3	Final Exam (MCQs, Short notes, short essay)	11-12-13	60 %

7. Learning Resources

1	Required Textbooks	1. Guyton, A.C. and Hall, J.E. Textbook of Medical Physiology. Latest edition. W.B. SaundersCompany, Philadelphia.
2	Essential References Materials	1. Fox, 8.1. Human Physiology. W.C. Brown Publlshers. Latest edition. Dubuque.Ganong, W.F. Review of Medical Physiology. Latest edition. Appleton and Lange, Norwalk.
3	Electronic Materials	1. http://accesspharmacy.mhmedical.com/ss/About.aspx https://sdl.edu.sa/SDLPortal/ar/Publishers.aspx
4	Other Learning Materials	1. None

Foundations of Pharmacy Practice I

Course Name: Foundations of Pharmacy Practice I	أسس ممارسة الصيدلة1	إسم المقرر:
Course Code & No.: PHP112	PHP112	رقم المقرر ورمزه:
Credits: 1(1+0+0)hours	1(1+0+0)hours	عدد الساعات: المعتمدة:
Prerequisite: None	لا أحد	المتطلب: السابق:
Level: 2	2	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1.Course Description

This course is intended to introduce the student to the various roles played by pharmacists in hospital, community and industrial settings. The course will introduce student to ethical decision and professional communication skills in pharmacy profession besides basics of computers application in health sciences.

2. Course Main Objectives

This course aims to introduce students to:

- Various roles of pharmacists in hospital, community and industrial settings.
- Ethical decision making in pharmacy profession.
- Professional communication in pharmacy profession.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Principles of Biomedical Ethics	Interactive lectures, class room discussion, demonstration.	midterm and final exams (MCQs, short notes, essay notes)
1.2	Define roles of pharmacists in various pharmacy practice settings	Interactive lectures, class room discussion, demonstration.	midterm and final exams (MCQs, short notes, essay notes)
1.3	Ethics in research	Interactive lectures, class room discussion.	Midterm and final exams (MCQs, short notes, essay notes)

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Communication with other Healthcare Professionals	Interactive lectures, class room discussion.	midterm and final exams (MCQs, short notes, essay notes) and Role Playing
3.0	**Values**		
3.1	Describe Communication ability of the Pharmacist with patient, caregiver and Healthcare professional.	Interactive lectures, class room discussion.	Midterm and final exams (MCQs, short notes, essay notes)
3.2	Ethical Dilemma in delivery of patients centered cared (Conflict of interest and end of life decision).	Interactive lectures, class room discussion.	Midterm and final exams (MCQs, short notes, essay notes)

4. Course Content

No	List of Topics	Contact Hours
1	Pharmacy settings and role of pharmacist I (Community Pharmacy)	3
2	Pharmacy settings and role of pharmacist II (Hospital Pharmacy)	3
3	Pharmacy settings and role of pharmacist III (Pharmaceutical Industry)	3
4	Principles of Biomedical Ethics	2.5
5	Code of Ethics and oath of Pharmacist	2.5
6	Ethical cases in pharmacy profession	3
7	Ethics in research	2.5
8	Ethical Dilemma in delivery of patients centered cared (Conflict of interest and end of life decision).	2.5
9	Communication with patients	3
10	Communication with other Healthcare Professionals	3
	Total	28

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	15
2	Laboratory/Studio	---
3	Tutorial	---
4	Others (specify)	---
	Total	15

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-term exam		20%
2	Role playing		20%
3	Final exam		60%

7. Learning Resources

1	Required Textbooks	• Foundation in Pharmacy Practice by Ben Whalley • Communication Skills in Pharmacy Practice (fifth edition) by Robert S. Beardsley
2	Essential References Materials	None
3	Electronic Materials	http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx http://search.proquest.com/
4	Other Learning Materials	Instructor Handouts

Level (3)

No	Course Title	Code/No.
1	Biochemistry	PHG 221
2	Pharmaceutics (1)	PHT221
3	Pharmacognosy	PHC 231
4	Introduction to Pathophysiology	PHP 251
5	Foundations of Pharmacy Practice (2)	PHP 213
6	Immunology	PHG 231
7	Economic System in Islam	IC 103
8	Principals of Medicinal Chemistry	PHC 241

Biochemistry

Course Name: Biochemistry	كيمياء حيوية	إسم المقرر:
Course Code & No.: PHG 221	PHG 221	رقم المقرر ورمزه:
Credits:3(2+1+0)	3(2+1+0)	عدد الساعات: المعتمدة:
Prerequisite: None		المتطلب السابق: لا يوجد
Level: 3	3	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1.Course Description

This course is concerned with the study of carbohydrates, lipids, proteins, nucleic acids and immunoglobulins chemical structures and biological importance, enzymes, glycolysis, gluconeogenesis and other metabolic pathways of carbohydrates. Regulation of blood glucose level will also be discussed. It also deals with lipids and proteins, nucleotides metabolism and biosynthesis. An overview of the genetic errors found in amino acids, porphyrins (porphyrias), haemoglobin, and minerals metabolism.

2. Course Main Objectives

1. Study the chemistry and biological importance of carbohydrates, lipids, proteins, nucleic acids and immunoglobulins.
2. Study the enzymes, porphyrin, haemoglobin and metabolism of carbohydrates, lipids, proteins, nucleotides and minerals.
3. Clinical correlations and the action of certain therapeutic as well as toxic agents are explained.
4. Practical labs involve determination of blood biochemical parameters.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize the cell chemistry, digestion and absorption of carbohydrates, lipids, proteins, nucleic acids and their related disorder.	- Lectures	MCQs, short notes and short essay
1.2	Memorize the metabolism of fatty acids, ketone bodies, cholesterol and lipoproteins.	- Lectures	MCQs, short notes and short essay
1.3	Describe the metabolism of carbohydrates, amino acids, nucleotides and minerals and their related disorders.	- Lectures	MCQs, short notes and short essay

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Explain the glycolytic bypass reactions and their regulation.	- Lectures	MCQs, short notes and short essay
2.2	Differentiate between competitive and non-competitive inhibition.	- Lectures	MCQs, short notes and short essay
2.3	Summarize the amino acid, lipids metabolism and errors of their metabolism.	- Lectures	MCQs, short notes and short essay
2.4	Examine blood biochemical parameters such as glucose, cholesterol and total protein levels.	-Practical sessions	Final practical lab examination Continuous lab student evaluation
3.0	**Values**		
3.1	Examine blood biochemical parameters such as glucose, cholesterol and total protein levels.	-Practical sessions	Final practical lab examination Continuous lab student evaluation

4. Course Content

No	List of Topics	Contact Hours
1	Introduction Cell chemistryEnzymes	2.7
2	Carbohydrates digestion Glycolysis	2.7
3	Krebs' cycle Gluconeogenesis	2.7
4	Glycogen metabolism	2.7
5	Hexose monophosphate (HMP) pathway Regulation of blood glucose level	2.7
6	Digestion and absorption of lipids Triglycerides biosynthesis Complex lipid metabolism	2.7
7	Fatty acid oxidation Ketone body metabolism	2.7
8	Cholesterol metabolism Lipoprotein metabolism	2.7
9	Digestion and absorption of proteins Urea cycle	2.7
10	Metabolism of individual amino acids Inborn errors of amino acid metabolism	2.7
11	Minerals metabolism	2.7
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	NA
4	Others (specify)learning hours	75
	Total	135

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-term exam	6	30%
2	Continuous evaluation of practical	Weekly	10%
3	Final practical exam	11	10%
4	Final exam	12	50%

7. Learning Resources

1	Required Textbooks	- Lippincott's Illustrated Reviews: Biochemistry. Seventh edition. Wolters Kluwer. - Harper's Illustrated Biochemistry. 30th edition, McGraw-Hill Companies. - Devlin, T.M. Textbook of Biochemistry with Clinical Correlations. Sixth edition. John Wiley and Sons, Inc. - Marks' basic medical biochemistry: a clinical approach. Fifth edition. Philadelphia, Wolters Kluwer. - Color atlas of biochemistry second edition.
2	Essential References Materials	- Important references materials required for the course are available in the library.
3	Electronic Materials	http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://www.google.com http://www.pubmed.com http://www.sciencedirect.com
4	Other Learning Materials	

Pharmaceutics I

Course Name: Pharmaceutics I	صيدلانيات 1	إسم المقرر:
Course Code & No.: PHT 221	PHT 221	رقم المقرر ورمزه:
Credits:3(2+1+0)	(2+1+0)3	عدد الساعات: المعتمدة:
Prerequisite: MATH 135	MATH 135	المتطلب: السابق:
Level: 3	3	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1.Course Description

In this course, the principles of chemistry, physics and mathematics are applied to the pharmaceutical sciences. solubility, partitioning, reaction kinetics and stabilization of formulations will be considered

2. Course Main Objectives

This course aims to introduce students to:

- Fundemnatales of measurment and calculation in pharmaceutices
- Assessement of the physical and chemical data in order to evaluate the stability of a given formulation.
- Compounding of different liquid dosage forms.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Outline different types of concentrations (Percentage strength, PPM et.	Lectures	MCQs, short notes and short essays
1.2	Record different types of Pharmaceutical solutions.	Lectures	MCQs, short notes and short essays
1.3	List different types of flows (Newtonian & non-Newtonian systems)		
2.0	**Skills**		
2.1	Estimate different types of Pharmaceutical solutions	Lectures	MCQs, short notes and short essays
2.2	Differentiate between different types of Pharmaceutical solutions	Lectures	MCQs, short notes and short essays
3.0	**Values**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.1	Evaluate the surface tension	Practical sessions	Continuous labevaluationFinal practical examination
3.2	Prepare different pharmaceutical solution dosage forms	Practical sessions	Continuous labevaluation

4. Course Content

No	List of Topics	Contact Hours
1	Introduction into pharmaceutics calculations *Systems of Measurement and Percentage Concentrations	2.72
2	Pharmaceutical calculations (Cont……) *Dilution and Concentration &*ALLIGATION METHODS.	2.72
3	Physical pharmacy Factors affecting solubility of gas in liquid**Factors affecting solubility of solid in liquid- *Factors affecting solubility of liquid in liquid- *Isotonicity	2.72
4	Surface tension and interfacial tension*Types of interface- *Surfactants and its types - *Micellar surfactants	2.72
5	Rheology (*Definition- *Rheograms- *Types of flow- *Newtonian systems and non-Newtonian systems	2.72
6	Pharmaceutical solutions(*Aqueous Solution Douches, Water & Aromatic water, Enemas ,Gargles ,Mouthwash ,Nasal wash.,Otic Solution and syrups)	2.72
7	Pharmaceutical solutions (*Non-aqueous Solution ,Elixirs ,Sprits, Collodions, Glycerin, Liniments and Lotions)	2.72
8	Suspension (*Physical properties, of a well-formulated suspension- *Pharmaceutical applications of suspensions- *Formulation of suspensions)	2.72
9	Suspension CONT…. *Types of suspension- Suspending Agents- *Evaluation of suspension	2.72
10	Emulsion (*Types of emulsion- *Pharmaceutical applications of emulsions*Emulsifying agents- *Tests for identification of emulsion type)	2.72
11	Emulsion (Emulsifying agents (mechanism and its types)- **Stability of emulsion	2.72
	Total	30

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	--
4	Others (specify):	--
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm	6	30 %
2	Continuous lab assessment	Weekly	10%
3	Final practical exam	11	10 %
4	Final exam	12	50 %

7. Learning Resources

1	Required Textbooks	*Aulton's Pharmaceutics: The design and manufacture of medicines – 2007 – 3rd edition (Edited by Michael E. Aulton) *Martin's physical pharmacy and pharmaceutical sciences – 2006 - 5th edition (P. J. Sinko) *A.J. Winfield and R.M. Richards: Pharmaceutical Practice, Churchill Livingston, St. Louis, MO, USA, 3rd Edition, 2004 *Ansel's Pharmaceutical dosage forms and drug delivery systems: 2005 – 8th edition – Loyd Allen, Nicholas Popovich and Howard Ansel
2	Essential References Materials	*A.J. Winfield and R.M. Richards: Pharmaceutical Practice, edition 5 (2018). Churchill Livingston, St. Louis, MO, USA. Salvatore Turco, Sterile Dosage Forms Their Preparation and Clinical Application. Williams & Wilkins, Baltimore, MD. Edition 5 (2019)..
3	Electronic Materials	• https://www.dropbox.com/s/sxsjit1cih1yx2k/British%20National%20Formulary.pdf dl • https://www.dropbox.com/s/x7b3scj66yfwp50/BNF%20for%20Children%202014-2015%5bNewMedicalBooks%5d.pdf?dl
4	Other Learning Materials	N/A

Pharmacognosy

Course Name: Pharmacognosy	العقاقير	إسم المقرر:
Course Code & No.: PHC231	PHC231	رقم المقرر ورمزه:
Credits:3(2+1+0)	(2+1+0)3	عدد الساعات:
Prerequisite: PHC122	PHC122	المتطلبات المسبقة:
Level: 3	3	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1.Course Description

Pharmacognosy course aims to provide the knowledge and understanding of the medicinal plants and classes of chemical natural products and to encourage students to take a broad and continuing interest in medicinal plants with emphasis to those available in the Saudi Arabia. Introduce the student to the different types of complementary and alternative medicine in addition to dietary supplements and nutraceuticals.

2.Course Description

The course aims to introduce students to:

1. Understand the importance of natural products particularly medicinal plants as a source of drugs
2. Know basic knowledge about natural products as a class of drugs.
3. Understand the extraction and identification methods of different types and classes of natural products
4. Understand physical and chemical properties, pharmacological activity, toxicity and, uses of natural products
5. Understand the nutraceuticals concept and the constituents of dietary supplements

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	List plants and other organisms as natural sources of drugs and therapeutic importance	Lectures	MCQs, short notes and short essays
1.2	Recognize active constituents present in leaf, fruit, seed, flower and bark and their pharmacological actions and contraindications	Lectures	MCQs, short notes and short essays

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Explain the potential use of traditional medicines and herb combinations based on scientific and clinical evidence	Lectures	MCQs, short notes and short essays
2.2	Summarize methods to explore the benefits of novel natural sources of drugs and therapeutic importance.	Lectures	MCQs, short notes and short essays
3.0	**Values**		
3.1	Perform chemical tests for identification of phyto-constituents or plant products	Practical sessions	Continuous lab evaluationFinal practical examination

4. Course Content

No	List of Topics	Contact Hours
1	**Introduction to Pharmacognosy (Crude drugs classifications, Preparation and adulteration of crude drugs and nutraceuticals), phytochemistry (Classes of naturally occurring compounds and their sources)**	**3**
2	**Introduction for volatile oils (Definition, Preparations, characteristics and classes and nature of volatile oils)**	**3**
3	**Description of different classes of volatile oils**	**3**
4	**Introduction for glycosides (Definition, Preparations, characteristics and classes of glycosides)**	**3**
5	**Description of different classes of glycosides**	**3**
6	**Introduction for alkaloids (Definition, Preparations, nature, classes of alkaloids and qualitative characterization by precipitating and color reagents)**	**3**
7	**Description of different classes of alkaloids**	**3**
8	**Introduction for carbohydrates (Classes, Identifications, semi-synthetic compounds obtained from carbohydrates "e.g., sucralfate, ETC….")**	**3**
9	**Introduction for bitter principles and Description of herbal drug rich in bitter principles (Khellin, Artemisinin, Podophyllotoxins, cucurbitacins) and natural products from animal source (Musk, Cod liver oil and cochineal)**	**3**
10	**Dietary supplements (vitamins "fat and water soluble), minerals, and other constituents)**	**3**
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	28
3	Tutorial	--
4	Others (specify):	77
	Total	135

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm	6	30 %
2	Continuous lab assessment	Weekly	10%
3	Final practical exam	11	10 %
4	Final exam	12	50 %

7. Learning Resources

1	Required Textbooks	a. W.C. Evans, "Trease and Evans, PHARMACOGNOSY" 13th Edition, Bailliere Tindall, London, Philadelphia, Toronto, Sydney, Tokyo (2013). b. Kurt B.G. Torssell, "Natural Product Chemistry, Mechanestic Biosynthetic and Ecological Approai Apotekarsocieteten- Swedish. Pharmaceutical Pr Sweden (2008). c. - Harborne, J.B., "Phytochemical Methods", 3rd ed., Chapma Hall, London, New York (2009).

2	Essential References Materials	• Gunnar Samuelsson. Drugs of Natural Origin. 4th. edition 1999. Swedish Pharmaceutical press. - J. Higgins, D.J. Best, J. Jones, "Biotechnology, Principles and Applications", Blackwell Scientific Publications (1995). - WHO monographs on selected medicinal plants, World Health Organization, Paperback Publisher, vol. 1, (1999) - WHO monographs on selected medicinal plants, World Health Organization, Paperback Publisher, vol. 2, (2002)
3	Electronic Materials	http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx https://www.dropbox.com/s/sxsjit1cih1yx2k/British%20National%20Formulary.pdf?dl=0 https://www.dropbox.com/s/x7b3scj66yfwp50/BNF%20for%20Children%202014-2015%5BNewMedicalBooks%5D.pdf?dl=0 www.ncbi.nlm.nih.gov/SNP/ Encyclopedia of Medicinal Plants
4	Other Learning Materials	N/A

Introduction to Pathophysiology

Course Name: Introduction to Pathophysiology	مقدمة في علم الامراض	إسم المقرر:
Course Code & No.: PHP251	PHP251	رقم المقرر ورمزه:
Credits: 1 (1 + 0 + 0)	(2+1+0)3	عدد الساعات: المعتمدة:
Prerequisite: PHG 112	PHG 112	المتطلب: السابق:
Level: 3	3	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1.Course Description

This course is designed to promote the understanding and application of fundamental disease processes in clinical settings, that is the general concepts of diseases including; etiology, pathogenesis, and clinical significance

2. Course Main Objectives

This course aims to provide students with:

- The knowledge of the pathophysiological basis of diseases.
- Description of various pathogenic process of diseases.
- The basic and general concept of neoplasm.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Discuss the etiology, pathogenesis, local and systemic effects of cell injury.	Lectures	MCQs, short notes and short essays
1.2	Describe the phenomenon of inflammation and its relationship to disease process.	Lectures	MCQs, short notes and short essays
1..3	Discuss the implication of different patterns of wound healing.	Lectures	MCQs, short notes and short essays
1.4	Discuss the basic principles, pathogenesis and clinical significance of circulatory disorders, immunopathology and neoplasm	Lectures	MCQs, short notes and short essays
2.0	**Skills**		
2.1	Compare between the various types of tumors and their characteristic features.	Lectures	MCQs, short notes and short essays
2.2	Relate the various pathophysiological mechanisms and clinical presentations to the specific causation	Lectures	MCQs, short notes and short essays

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	Values		
3.1	Demonstrate ability towards self-learning, reasoning and problem solving	e.Learning	Survey

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to pathophysiology and General concepts of diseases	1.5
2	Cell injury (adaptational changes, causes, mechanism and manifestation of cell injury) +(Apoptosis versus necrosis)	1.5
3	Introduction to inflammation, cause, mechanism and chemical mediators of inflammation	1.5
4	Acute and chronic inflammation	1.5
5	Tissue repair and regeneration	1.5
6	Introduction to disorders of hemostasis and coagulation	1.5
7	Circulatory disorders (edema, thrombosis and shock)	1.5
8	Basic immunopathology, Hypersensitivity and autoimmune diseases	1.5
9	Neoplasia 1 (Introduction to neoplasia, tumor nomenclature and Carcinogenesis)	1.5
10	Neoplasia 2 (Carcinogenic agents, tumor metastasis Clinical effects of neoplasm, tumor markers and approach to diagnosis of cancer)	1.5
Total		15

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	15
	Total	15

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid Term- 1	6	30%
2	Quiz 1	4th week	5%
3	Quiz-2	8th week	5%
4	Final exam	12	60%

7. Learning Resources

1	Required Textbooks	• Essentials of Human Physiology and Pathophysiology for Pharmacy and Allied Health by Laurie K. McCorry, Martin M. Zdanowicz, 2018. • Kumar V, Abbas AK, Fusto N, Mitchell. Robbins basic pathology. 8th edition. Philadelphia: Elsevier saunders; 2010.p.1066- 1093.
2	Essential References Materials	Caroline S Zeind PharmD, Michael G Carvalho PharmD. Applied Therapeutics. The Clinical Use of Drugs. 11th edition (2018). Lippincott Williams & Wilkins Publishers.
3	Electronic Materials	• http:www.library.qu.edu.sa/pages/default.aspx • http:www.pharmacylibrary.com.ezproxy.qu.edu.sa/public about • http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx. • http:// search.proquest.com/
4	Other Learning Materials	• Computer, laptops, Data show and Software's available.

Foundations of Pharmacy Practice (2)

Course Name: Foundations of Pharmacy Practice (2)	إسم المقرر: أسس ممارسة الصيدلة (2)	
Course Code & No.: PHP 213	PHP 213	رقم المقرر ورمزه:
Credits: 2 (1+0+1)	(1+0+1) 2	عدد الساعات:
Prerequisite: PHP 112	PHP 112	المتطلبات المسبقة:
Level: 3	3	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1.Course Description

This course introduces the student to the contemporary concepts and foundations in pharmacy practice including the principles of pharmacy management, leadership, problem-solving skills, and the key aspects of modern hospital pharmacy practice.

2. Course Main Objective

- This course aims to introduce students to:
- Principles of pharmacy management and leadership
- Problem-solving skills
- Key aspects of modern hospital pharmacy practice with emphasis on the pharmacy related policy and procedures, formulary management system, pharmacy and therapeutics committee, and medication distribution systems.
- The application of technology and digital innovations in medication use process.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Describe the management principles in pharmacy practice settings	Lecture and tutorial	written exams (MCQs, SEQs, short notes) Written assignment
1.2	Discuss leadership theories and models, and qualities needed to be an effective leader	Lecture and tutorial	written exams (MCQs, SEQs, short notes) Written assignment

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	Recognize the modern aspect of institutional pharmacy practice (i.e., pharmacy policies and procedures in the healthcare setting, the formulary management system, pharmacy and therapeutics committee, medication distribution systems, and the application of technology and digital innovations in medication use process).	Lecture and tutorial	written exams (MCQs, SEQs, short notes) Written assignment
2.0	Skills		
2.1	To propose solutions for emerging issues and problems in the practice settings.	Lecture and tutorial	written exams (MCQs, SEQs, problem-solving)
3.0	Values		

4. Course Content

No	List of Topics	Contact Hours
1	• Introduction to Pharmacy management & management Activities	3.25
2	• Leadership in Pharmacy	3.25
3	• Human resources management in Pharmacy	3.25
4	• Introduction to financial management and pharmaceutical marketing	3.25
5	• Problem solving models in pharmacy practice	3.25
6	• Institutional pharmacy: medication distribution systems	3.25
7	• Inventory control management	3.25
8	• Pharmacy automation and technology; types and management	3.25
9	• Pharmacy and therapeutics committee	3.25
10	• Drug formulary and formulary system	3.25
11	• Hospital pharmacy practice standards: policies and procedures	3.25
Total		35.75

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	11.92
2	Laboratory/Studio	
3	Tutorial	23.83
4	Others (specify)	
	Total	35.75

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid-term written exam	6-8	25 %
2	Written assignments (1 and 2)	8-10	25 %
3	Final written exam	12-14	50%
6	Total	-	100%

7. Learning Resources

1	Required Textbooks	1. Thomas R. Brown (Editor). Handbook of Institutional Pharmacy Practice. 4th edition. American Society of Health-System Pharmacists (ASHP). 2. Pharmacy Management: Essentials for All Practice Settings, 5th edition (2020). David P. Zgarrick, Greg L. Alston, Leticia R. Moczygemba, Shane P. Desselle. Published by McGraw Hill.
2	Essential References Materials	List Essential References Materials (Journals, Reports, etc.)
3	Electronic Materials	QU digital library including SDL. Accesspharmacy database
4	Other Learning Materials	Instructor's handouts and lecture slides

Immunology

Course Name: Immunology	علم المناعة	إسم المقرر:
Course Code & No.: PHG 231	PHG 231	رقم المقرر ورمزه:
Credits: 2(2+0+0)	(2+0+0) 2	عدد الساعات: المعتمدة:
Prerequisite: Biol 106	Biol 106	المتطلب: السابق:
Level: 3	3	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1.Course Description

This is an introductory course on basic principles of immunology, focusing on the cellular and molecular processes involved in innate (non-specific) immunity and adaptive (specific) immunity. It expands the descriptions of the main elements of immunity, immune responses, development of immune cells, interactions between humoral and cell mediated immunity, and pathology resulting from immune responses.

2. Course Main Objectives

- To provide knowledge based curriculum for understanding of immune system.
- To specify the role of immune system in infection and inflammation
- To relate and apply knowledge gained for understanding selected immune cells.
- To understand the role of immune system in hypersensitivity.
- To underlying the role of immune system in autoimmunity.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Record difference between innate and adaptive immunity and memorize the mechanisms of both elements.	Lectures	MCQs, short notes and short essays
1.2	Define the basic structural and functional components of the immune system and define the different classes of antigens including MHC cells.	Lectures	MCQs, short notes and short essays
2.0	**Skills**		
2.1	Recognize the role of immunoglobulins, complement system and cytokines in transplantation immunology and immunosuppression therapy.	Lectures	MCQs, short notes and short essays
3.0	**Values**		

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to General Immunology	3
2	Innate Immunity	3
3	Adaptive immunity	3
4	Cytokines and cells of immune system	3
5	Antibodies structure and function	3
6	The complement system	3
7	Immunogen, antigen and MHC	3
8	Antigen-antibody interaction	3
9	Hypersensitivity	3
10	Autoimmunity and tolerance	3
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	--
4	**Others (specify):**	--
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm	6	30 %
2	Quiz exam	8	10 %
3	Final exam	12	60 %

7. Learning Resources

1	Required Textbooks	1. Goldsby RA, Kindt TJ. Osborne BA. Kuby Immunology. Sixth edition, 2015, W.H Freeman & Co., New York. 2. Janeway C, Traverse P, Walport M, Capra J. ImmunoBiology. Eight Edition, 2018. Garland Publishing, Inc, New York. 3. Coico R, Sunshine G, Bengamini E. Immunology. A short course. Seventh edition. 2014. Wiley-Uss Publications. 4. Abul K. Abbas and Andrew H. Lichtman. Basic Immunology. 2021. Sauders
2	Essential References Materials	1. Morgan BP. Complement clinical aspects and relevance to disease. 2015. Academic press, London. 2. Ravetch JV and Bolland S. IgG Fc receptors. Annual review of immunology. Edn-19, 2012. 3. Amigorena S and Bonnerot C. Fc receptor signaling and trafficking: a connection for antigen processing. Immunological Reviews. 171, 279, 2016. 4. Hennecke J and Wiley DC. T-cell receptor-MHC interactions up close. Cell 104, 1. 2021. 5. Cyster JG. Chemokines and cell migration in secondary lymphoid organs. Science. 286, 2098. 2020. 6. Jenkins MK, Khoruts A, Ingulli E. Invivo activation of antigen-specific CD-4 T-cells. Annual Review of Immunology. 19, 23, 2019. 7. Buckley RH. Advances in immunology: Primary immunodeficiency diseases due to defects in lymphocytes. New England Journal of Medicine. 343, 1313, 2017.
3	Electronic Materials	Pubmed.com http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx http://search.proquest.com
4	Other Learning Materials	N/A

Principles of Medicinal Chemistry

Course Name: Principles of Medicinal Chemistry	مبادئ الكيمياء الدوائية	إسم المقرر:
Course Code & No.: PHC241	PHC241	رقم المقرر ورمزه:
Credits: 3(2+1+0)	(2+1+0)3	عدد الساعات: المعتمدة:
Prerequisite: PHC 112 and PHC 121	PHC 112 and PHC 121	المتطلب: السابق:
Level: 3	3	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course introduces students to medicinal chemistry of drugs with special emphasis on pharmacokinetic, pharmacodynamic and physicochemical properties in relation to biological activity. The effect of the chemical structure on drugs interaction with different cell's targets is discussed. The metabolism of drugs and factors affecting it is explained in detail. The course also introduces students to basic principles of drug discovery and development and drug design. The course also deals with drug synthesis, identification and assay.

2. Course Main Objectives

The course aims to introduce students to:
Understand the biological activity relationship with physicochemical properties of a drug molecule
Understand the metabolic process and, factors involved in metabolism of a drug
Understand the modern drug discovery and, elements governing it.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe how drug functions at molecular level	Lectures	MCQs, short notes
1.2	Outline, how to carry out rational drug design	Lectures	MCQs, short notes
1.3	Recognize structure activity and quantitative structure activity relationship (SAR and QSAR) in drug discovery	Lectures	MCQs, short notes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Estimate metabolism of a drugs based on their chemical structure and their interpretation in drug design	Lectures	MCQs, short notes
2.2	Explain the relationship between physiochemical properties of drug, prodrug and their biological activity	Lectures	MCQs, short notes
2.4	Calculate the active ingredient in the pharmaceutical forms and Perform preparation, identification assay for some important medicinal agents	Practical sessions	Continuous labevaluationFinal practical examination
3.0	**Values**		

4. Course Content

No	List of Topics	Contact Hours
1	Introduction (sources of drugs, nomenclature of drugs, and classification of drugs). The cells as drug targets (which includes lipid, carbohydrate, proteins and nucleic acid)	2
2	The phase of drug action which includes (pharmaceutical phase, pharmacokinetic phase and pharmacodynamic phase)	2
3	Receptors and drug targets(receptors, how does the message get received, design of agonists, design of antagonists, partial agonists, inverse agonists, desensitization and sensitization, tolerance and dependence, receptor types and subtype, affinity, efficacy and potency	2
4	Physicochemical properties-biological activity relationships (Drug acid-base properties and drug absorption-distribution)	2
5	Physicochemical properties-biological activity relationships (optical isomerism and pharmacologic activity, geometric isomerism and pharmacologic activity, conformational isomerism and pharmacologic activity, isosterism and pharmacological activity)	2
6	Drug metabolism (Phase I)	3
7	Drug metabolism (Phase II and Factors Effecting Drug Metabolism)	3
8	Drug latentiation prodrugs (carrier-linked and bioprecursor prodrugs, drug delivery system	2

No	List of Topics	Contact Hours
9	Quantitative Structure Activity Relationships (QSAR) of drugs (hydrophobicity, electronic effect, steric effect and Hansch equation)	2
10	Basic concepts of drug desgin and development (Stages of drug Development)	2
11	Basic concepts of drug discovery and development	2
12	Basic concepts of drug discovery and development	2
13	Basic concepts of drug desgin (Optimizing Drug Target-interactions)	2
14	Basic concepts of drug desgin (Optimizing Pharmacokinetic properties)	2
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	--
4	**Others (specify):**	--
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Midterm**	6	30 %
2	**Continuous lab assessment**	Weekly	10%
3	**Final practical exam**	11	10 %
4	**Final exam**	12	50 %

7. Learning Resources

1	**Required Textbooks**	a. Jaime N. Delgado, Wilson and Gisvold's Textbook of Organic, Medicinal and Pharmaceutical Chemistry, Lippincott-Raven Publishers, Philadelphia, New York, USA. b. Williams, D.A. and Lemke, T. L., Foye's Principle of Medicinal Chemistry, Lippincott Williams & Wilkins, Philadelphia, PA., 5th Ed. c. A. Gringauz, Introduction to Medicinal Chemistry, How Drugs act and why, Wiley – VCH
2	**Essential References Materials**	• Jaime N. Delgado, Wilson and Gisvold's Textbook of Organic, Medicinal and Pharmaceutical Chemistry, Lippincott-Raven Publishers, Philadelphia, New York, USA. • Williams, D.A. and Lemke, T. L., Foye's Principle of Medicinal Chemistry, Lippincott Williams & Wilkins, Philadelphia, PA., 5th Ed.
3	**Electronic Materials**	• Chem-web • Medicinal Chemistry Section, Royal Society of Chemistry, UK web-portal • Medicinal Chemistry Section, American Chemical Society, USA web-portal • Professional Societies, European Medicinal Chemistry Society • Journals: Medicinal Chemistry (ACS & RSC), Future Medicinal Chemistry, Medicinal Chemistry Reviews, Drugs of Future • Support Websites: NCBI: www.ncbi.nlm.nih.gov • PDB (Protein Data Bank)
4	**Other Learning Materials**	N/A

Level (4)

No.	Course Title	Code/No.
1	Pharmaceutics (2)	PHT 222
2	Foundations of Pharmacy Practice (3)	PHP 218
3	Pharmacokinetics	PHT 231
4	Foundations of the Islamic Political System	IC 104
5	Introduction to Pharmacology	PHG 241
6	Self-care and OTC Therapeutics	PHP 221
7	Evidence-based Practice (1)	PHP 231
8	Introductory Pharmacy Practice Experience (1)	PHP 281
9	Free course	

Pharmaceutics II

Course Name: Pharmaceutics I	صيدلانيات 2	إسم المقرر:
Course Code & No.: PHT 222	PHT 222	رقم المقرر ورمزه:
Credits: 3 (2+1+0)	(2+1+0) 3	عدد الساعات: المعتمدة:
Prerequisite: PHT 221	PHT 221	المتطلب: السابق:
Level: 4	4	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course provides an understanding of various dosage forms and drug delivery systems, and how medicinal and pharmaceutical substances are incorporated into them

2. Course Main Objectives

This course aims to introduce students to: The principles and techniques involved in the formulation, preparation and evaluation of solid , semisolid dosage forms, sterile and respiratory dosage forms

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Outline different types semisolid dosage form.	Lectures	MCQs, short notes and short essays
1.2	List different types of solid dosage form.	Lectures	MCQs, short notes and short essays
1.3	Recognize different types of respiratory dosage forms)	Lectures	MCQs, short notes and short essays
1.4	Recognize different types of sterile dosage forms	Lectures	MCQs, short notes and short essays
2.0	**Skills**		
2.1	Differentiate between different types of solid dosage forms	Lectures	MCQs, short notes and short essays

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	**Values**		
3.1	Perform of different types of semisolid dosage form	Practical sessions	Continuous labevaluationFinal practical examination
3.2	Perform quality control tests for solid dosage form	Practical sessions	Continuous labevaluation

4. Course Content

No	List of Topics	Contact Hours
1	Semisolids dosage forms(Ointments * Creams *Gel & Quality control evaluations)	2.72
2	Semisolids dosage forms (*Gel & Quality control evaluations)	2.72
3	Suppository(Rectal dosage form- *Bases- Vaginal dosage forms- *Quality control evaluations)	2.72
4	Suppository (cont.). (Vaginal dosage forms & *Quality control evaluations)	2.72
5	Respiratory dosage forms (Metered dosage inhaler- *Dry powder inhaler - Nebulizers- Quality control evaluations)	2.72
6	Powder and granules *Properties (basic and derived)- Measurements of flowability*Granulation - *Types of granulations - Advantages and disadvantages)	2.72
7	Tablets -Types of tables –Excipients- Functions of excipients	2.72
8	Tablets Methods of manufacturing of tablets- Quality control evaluations	2.72
9	Capsules (Hard gelatin capsules- Soft Gelatin Capsules-Quality control evaluationsMicroencapsulation-Method of microencapsulation	2.72
10	Ophthalmic products (Types- Excipients -Quality control evaluations)	2.72
11	Parenteral (Types- Excipients- Quality control evaluations)	2.72
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	30
3	**Tutorial**	--
4	**Others (specify):**	--
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Midterm**	6	30 %
2	**Continuous lab assessment**	Weekly	10%
3	**Final practical exam**	11	10 %
4	**Final exam**	12	50 %

7. Learning Resources

1	**Required Textbooks**	*Aulton's Pharmaceutics: The design and manufacture of medicines – 2007 – 3rd edition (Edited by Michael E. Aulton) *Martin's physical pharmacy and pharmaceutical sciences – 2006 - 5th edition (P. J. Sinko) *A.J. Winfield and R.M. Richards: Pharmaceutical Practice, Churchill Livingston, St. Louis, MO, USA, 3rd Edition, 2004 *Ansel's Pharmaceutical dosage forms and drug delivery systems: 2005 – 8th edition – Loyd Allen, Nicholas Popovich and Howard Ansel
2	**Essential References Materials**	A.J. Winfleld and R.M. Richards: Pharmaceutical Practice, edition 2 (2008). Churchill Livingston, St. Louis, MO, USA. Salvatore Turco, Sterile Dosage Forms Their Preparation and Clinical Application. Williams & Wilkins, Baltimore, MD. Edition 2 (2018).
3	**Electronic Materials**	https://www.dropbox.com/s/sxsjit1cih1yx2k/British%20National%20Formulary.pdf?dl https://www.dropbox.com/s/x7b3scj66yfwp50/BNF%20for%20Children%202014-2015%5bNewMedicalBooks%5d.pdf?dl
4	**Other Learning Materials**	N/A

Foundations of Pharmacy Practice (3)

Course Name: Foundations of Pharmacy Practice (3)	إسم المقرر: أسس ممارسة الصيدلة (3)	
Course Code & No.: PHP 218	PHP 218	رقم المقرر ورمزه:
Credits: 2 (1+0+1)	(1+0+1) 2	عدد الساعات:
Prerequisite: PHP 213	PHP 213	المتطلبات المسبقة:
Level: 4	4	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The course aims to provide students with contemporary knowledge and skills related to medication orders and prescriptions (electronic, computer-generated, and handwritten), best practices for dispensing of medications and related calculations, labelling of medications, and patient education/counselling. The course will introduce the student to aseptic technique and IV admixture program, and concepts related to extemporaneous compounding, packaging and re-packaging of medications. In addition, the course will introduce the students to prescriptions of controlled and narcotic drugs and related law and regulations, and investigational drugs in the healthcare systems.

2. Course Main Objective

This course aims to introduce students to:

- Prescriptions and medication orders
- Dispensing of medications and related calculations
- Labelling of medications
- Patient education and counselling
- Aseptic technique and IV admixture program
- Concepts related to extemporaneous compounding
- Packaging and re-packaging of medications
- Concepts related to investigational drugs and their roles in the healthcare systems
- Dispensing of controlled and narcotic drugs according to the law and regulations

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Describe prescriptions and medication orders, their types, and best practices when writing prescriptions	Lecture, tutorial and simulated pharmacy	written exams (MCQs, SAQs)
1.2	Explain the appropriate procedures and steps of medication dispesning and labeling	Lecture, tutorial and simulated pharmacy	written exams (MCQs, SAQs, scenarios) and tutorial
1.3	Describe packaging and re-packaging of medications and storage conditions	Lecture and tutorial	written exams (MCQs, SAQs) and tutorial
1.4	Discuss the principles of patient counseling and interviewing in patient care settings	Lecture and tutorial	written exams (MCQs, SAQs, scenarios)
1.5	Recognize the principles of aseptic technique and IV admixture and extemporaneous compounding of medications	Lecture and tutorial	written exams (MCQs, SAQs)
1.6	Describe the processes, the concepts and regulations related to investigational, controlled and narcotic drugs	Lecture and tutorial	written exams (MCQs, SAQs)
2.0	**Skills**		
2.1	Interpret prescriptions and medication orders appropriately	Lecture, tutorial and simulated pharmacy	written exams (MCQs, SAQs, scenario)
2.2	Perform calculations related to dosage and dispensing of medications	Tutorial	written exams (MCQs, SAQs, problem-solving)
3.0	**Values**		
3.1			

4. Course Content

No	List of Topics	Contact Hours
1	Introduction	3.25
2	Prescriptions and medication orders, types of prescriptions, principles and practical essentials related to Rx, their interpretations, and abbreviations	3.25
3	Dispensing of medications and related calculations: part-1	3.25
4	Dispensing of medications and related calculations: part-1	3.25
5	labelling of medications, auxiliary labels, and patient instructions	3.25
6	Packaging and re-packaging of medications and storage conditions	3.25
7	Patient counseling and its related communication/interviewing skills	3.25
8	Aseptic technique and IV admixture	3.25
9	Extemporaneous compounding	3.25
10	Concepts related to investigational drugs and their use in health system	3.25
11	Controlled and narcotic drugs: Overview and related regulations	3.25
Total		**35.75**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	11.92
2	**Laboratory/Studio**	
3	**Tutorial**	17.33
4	**Others (Simulated pharmacy)**	6.5
Total		35.75

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Mid-term written exam**	6-7	30 %
2	**Tutorials**	2-10	20%
3	**Final written exam**	12-14	50%
6	**Total**	-	100%

7. Learning Resources

1	**Required Textbooks**	1. Whalley, B.J., Fletcher, K.E., Weston, S. E., Howard, R.L. and Rawlinson, C.F. Foundation in pharmacy practice. Pharmaceutical Press (PhP), London. ISBN 9780853697473(latest edition) 2. Brown TR. Handbook of institutional pharmacy practice. ASHP; (Latest edition)
2	**Essential References Materials**	List Essential References Materials (Journals, Reports, etc.)
3	**Electronic Materials**	QU digital library including SDL Accesspharmacy database Selected materials from reliable and up-to-date sources related to the topics of the course
4	**Other Learning Materials**	Instructor's handouts and lecture slides

Pharmacokinetics

:Course Name Pharmacokinetics	حركية الدواء	اسم المقرر:
Course Code & No.: PHT 231	231PHT	رقم المقرر ورمزه:
Credits: 2 (1+0+1)	(1+0+1)2	عدد الساعات: المعتمدة:
Prerequisite: PHT 221	PHT 221	المتطلب: السابق:
Level: 4	4	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The course will introduce students to the basic concepts of pharmacokinetics with a special emphasis on the different pharmacokinetic models. Absorption, distribution, metabolism, and excretion of drugs and calculations of pharmacokinetic parameters of these processes will be discussed.

2. Course Main Objectives

This course aims to:

- Define and understand the meaning of pharmacokinetics and the different pharmacokinetic parameters.
- Estimate the values of different pharmacokinetic parameters from plasma drug concentration data
- Understand the differences between the pharmacokinetic models and know the advantages and limitations of each model
- Describe the characteristics of, and the differences between, linear and non-linear pharmacokinetics.
- Understand pharmacokinetic differences between different routes of administration

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the different pharmacokinetic models and parameters.	Lectures	MCQs, short notes, and short essays
1.2	Describe the characteristics of linear and non-linear pharmacokinetics.	Lectures	MCQs, short notes, and short essays
1.3	Describe the route of drug administration and define drug clearance	Lectures	MCQs, short notes, and short essays

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.4	Memorize the basic equations used in pharmacokinetic	Lectures	MCQs, short notes, and short essays
2.0	**Skills**		
2.1	Estimate the maintenance and loading dose for the different routes of administration	Training	Continuous lab Evaluation, MCQs, short notes, and short essays
2.2	Estimate drug concentration at any given time after drug administration for the different routes of administration	Training	Continuous lab Evaluation, MCQs, short notes, and short essays
3.0	**Values**		
3.1	Choose the appropriate dose and time interval to achieve the desired drug concentration in plasma.	Training	Continuous lab Evaluation, MCQs, short notes, and short essays
3.2	Calculate slope and intercept by using a scientific calculator	Training	Continuous lab Evaluation, MCQs, short notes, and short essays
3.3	Draw data on semi-log and ordinary paper to estimate pharmacokinetic parameters	Training	Continuous lab Evaluation, MCQs, short notes, and short essays

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to Pharmacokinetics	1.33
2	Pharmacokinetics models and methods of determination of drug concentration	2.66
3	Compartmental pharmacokinetics model	1.33

No	List of Topics	Contact Hours
4	One and two-compartment model IV bolus injection	2.66
5	One and two-compartment model single oral administration	2.66
6	One and two-compartment open model IV infusion and a loading dose	2.66
7	Multiple IV administration	2.66
8	Multiple oral administration	2.66
9	Non-linear pharmacokinetics	1.33
Total		**20**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	-
3	**Tutorial**	30
4	**Others (specify):**	--
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Midterm**	6	30 %
2	**Continuous lab assessment**	Weekly	20%
3	**Final exam**	11	50 %

7. Learning Resources

1	**Required Textbooks**	1. Applied Biopharmaceutics and Pharmacokinetics. Leon Shargel, Andrew B.C. Yu 2. Concepts in Clinical Pharmacokinetics (sixth edition)
2	**Essential References Materials**	Applied Biopharmaceutics and Pharmacokinetics. Leon Shargel, Andrew B.C. Yu
3	**Electronic Materials**	https://accesspharmacy.mhmedical.com/
4	**Other Learning Materials**	N/A

Introduction to Pharmacology

Course Name: Introduction to Pharmacology	مقدمة في علم الأدوية	إسم المقرر:
Course Code & No.: PHG241	PHG241	رقم المقرر ورمزه:
Credits: 3(2+1+0)	(2+1+0)3	عدد الساعات:
Prerequisite: PHG221	PHG221	االمتطلبات المسبقة:
Level: 4	4	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course is designed to introduce the students to the general principles of pharmacology with regard to the general pharmacological terms, sources of drugs, routes of drugs' administration, process and stages of drug development, safety, pharmacokinetics (absorption, distribution, metabolism and excretion) and pharmacodynamics (drug interaction with receptors and the resulting effect). It also explains the autonomic nervous system (ANS), its divisions, neurotransmitters for each division, the agonists and antagonists affecting ANS. It introduces the concepts of efficacy, potency and dose-dependent responses of drugs. The practical part of the course exposes the students to visually observe what is taught in the theory, using isolated tissues and common laboratory animals, that reinforces the concept and understanding of a topic.

2. Course Main Objectives

The course aims to introduce students to:

- The basic principles of pharmacology including the definition, nomenclature, routes of administration, sources and pregnancy categorization of drugs.
- The process of the drug development, from preclinical to clinical trials, its stages and the approval process by regulatory agencies.
- Study of pharmacokinetic properties of drugs such as absorption, distribution, metabolism and excretion of drugs including the factors affecting them.
- Different mechanisms as well as the factors that influence the drug action, relationship between dose and responses of drugs, various drug adverse effects and parameters to determine the safety of medication.
- Definition of drug interactions, the factors contributing, various mechanisms of drug interactions and the common examples of drugs that can cause the interactions.
- Introduce to the autonomic nervous system, its divisions, distribution of various parasympathetic and sympathetic receptors and their stimulatory actions.
- Pharmacology of parasympathetic as well as sympathetic drugs that includes the classification, mechanism, pharmacokinetics, adverse effects and contraindications of both agonistic and antagonist drugs.

- Application of various pharmacological equipment's, instruments, experimental animals, handling, routes of administration, parasympathetic and sympathetic drugs with hands-on experience in the lab to reinforce the theoretical concepts of the course.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe essential biomedical, pharmaceutical, social, behavioral, administrative and clinical sciences knowledge related to the development and use of medications, natural remedies, and other therapies for the prevention and treatment.	Lectures	MCQs, short notes and short essays
1.2	Recognize research and investigation methods in the pharmacy field.	Lectures	MCQs, short notes and short essays
2.0	**Skills**		
2.1	Integrate pharmaceutical sciences with pharmacy applications.	Lectures	MCQs, short notes and short essays
2.2	Use mathematical operations and quantitative methods to process data in various pharmacy fields and utilize appropriate information technologies to optimize medication use and patient care.	Lectures	MCQs, short notes and short essays
2.4	Demonstrate skills to conduct an experiment on isolated tissues and intact animals, and be able to evaluate and interpret the results obtained from such experiments	Practical sessions	Continuous labevaluationFinal practical examination
3.0	**Values**		

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to pharmacology: sources of drugs, definition of pharmacological terms & routes of administration	3
2	Drug development process, safety, pregnancy categories	3

No	List of Topics	Contact Hours
3	Adverse drug reactions, ED50, LD50, Therapeutic Index & drug-drug interactions	3
4	Pharmacokinetics and Drug Metabolism	6
5	Pharmacodynamic; Dose response relationship, graded and quantal dose responses, efficacy & potency	6
6	Introduction to Autonomic Nervous System	3
7	Cholinomimetic agents	6
8	Cholinoceptor antagonists	6
9	Sympathomimetic drugs	6
10	Sympatholytic drugs	3
Total		**45**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	45
2	**Laboratory/Studio**	45
3	**Tutorial**	--
4	**Others (specify): Learning hours**	45
	Total	135

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Midterm**	6	30 %
2	**Continuous lab assessment**	Weekly	10%
3	**Final practical exam**	11	10 %
4	**Final exam**	12	50 %

7. Learning Resources

1	**Required Textbooks**	a. Laurence L.Brunton (eds.): Goodman and Gilman's Pharmacological Basis of Therapeutics, 13th. Edition, 2017, McGraw-Hill, New York. ISBN-13: 9781259584749 b. Bertram G. Katzung, Susan B. Masters and Anthony J. Trevor (eds). Basic and Clinical Pharmacology, 15th Edition, 2021, McGraw Hill Lang, New York. c. Rang and Dale's Pharmacology, Rang HP, Ritter JM, Flower RJ, Henderson G (eds). 9th Edition, 2020, Churchhill Livingstone, London.
2	**Essential References Materials**	▪ Lippincott Illustrated Reviews: Pharmacology (Lippincott Illustrated Reviews Series). 8th Ed. 2022. Williams and Wilkins Publisher Co., N.Y.ISBN-13: 978-1451191776 ISBN-10:1451191774 ▪ Pelletier, Catherine: Lange Smart Charts Pharmacology 2/E Paperback – August 5, 2015. ISBN-13: 978-0071774369 ISBN-10: 007177436X.
3	**Electronic Materials**	▪ Pubmed.com ▪ http://www.library.qu.edu.sa/Pages/default.aspx ▪ http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about▪ http://accesspharmacy.mhmedical.com/ss/About.aspx ▪ http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx ▪ http://search.proquest.com
4	**Other Learning Materials**	N/A

Self-care and OTC Therapeutics

Course Name: Self-care and OTC Therapeutics	الرعاية الذاتية و العلاجات دون وصفة طبية	إسم المقرر:
Course Code & No.: PHP221	PHP441	رقم المقرر ورمزه:
Credits: 2(1+0+1)	(1+0+1)2	عدد الساعات: المعتمدة:
Prerequisite: PHP218	PHP218	المتطلب: السابق:
Level: 4	4	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

During this course, students will be taught OTC medications and other self-care remedies available to treat many different minor ailments. For each condition discussed, students will be taught basic causes, signs and symptoms, appropriate OTC medications, exclusion criteria for self-care. For each medication discussed, students will be taught the basic mechanism of action, uses, and potential side effects. This course will help students to understand how OTC medications and self-care products can be used safely and effectively.

2. Course Main Objectives

The course aims to introduce students to:

- Provide knowledge about over the counter drugs that include; legal requirement, drug classification, storage and the role of the pharmacist in the health information and self-care.
- Provides basic knowledge about selected minor ailments including causes, risk factors, signs/symptoms and selection of appropriate self-treatment or refer a patient to another health care provider.
- Provide knowledge of non-prescription drugs, including mechanisms of action, dosage, side effects, and contraindications of drugs in selected minor ailments affecting gastrointestinal, eye, ear, skin and upper respiratory system in different type of patient. Principles of complementary and Integrative Medicine (CIM) will also be introduced.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize the regulations govern the nonprescription medications.	Lectures	MCQs, short notes and Simulated pharmacy

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Recall signs, symptoms, risk factors, etiology and complications, and referral criteria of minor ailments such as heartburn, dyspepsia, intestinal gas, diarrhea, constipation, hemorrhoid, oral hygiene problems, cough, common cold, hay fever, common eye disorders, ear problems, acne, dandruff, psoriasis and parasitic skin diseases	Lectures	MCQs, short notes and Poster Presentation
1.3	Describe pharmacologic information of OTC products, some alternative medicines, and nonpharmacologic approaches for self-treatment of minor ailments such as heartburn, dyspepsia, intestinal gas, diarrhea, constipation, hemorrhoid, oral hygiene problems, cough, common cold, allergic rhinitis, common eye disorders, ear problems, acne, dandruff, psoriasis and parasitic skin diseases.	Lectures	MCQShort notes Poster PresentationSimulated pharmacy
2.0	**Skills**		
2.1	Collect, assess and interpret patient information to identify whether no intervention, self-care with OTC product, or medical referral is required.	Lectures Videos	MCQShort notesCase StudiesSimulated Pharmacy
2.2	Design, implement, monitor, evaluate, and adjust patient care plan to ensure safe, effective and economical self-treatment.	Lectures Videos	MCQ Short notesCase StudiesSimulated Pharmacy
2.3	Communicate sensitively and effectively with patients and others including any from different culture.	Lectures	MCQ Short notesCase StudiesSimulated PharmacySurvey
3.0	**Values**		
3.1	Maintain professional competency in providing patient care by committing to being an independent, self-initiated life-long learner.	Lectures	Survey
3.2	Demonstrate confidence, empathy, professional attitude, ethical behavior, social and cultural awareness and respect in all interactions.	Lectures	Simulated Pharmacy

4. Course Content

No	List of Topics	Contact Hours
1	Introduction • College mission, goals & objectives, Code of Conduct, Course syllabus • Simulated pharmacy • Self-care & Nonprescription Pharmacotherapy • Pharmacists' Patient Care Process in Self-Care Legal and Regulatory Issues in Self-Care Pharmacy Practice	3.15
2	Gastrointestinal disorders (1): • Constipation and laxatives	3.15
3	Gastrointestinal disorders (2) • Oral Cavity: mouth ulcer, oral thrush (candidiasis), herpes simplex, Cold sore, Oral hygiene (Gingivitis) • Heartburn, dyspepsia	3.15
4	Gastrointestinal disorders (3) Intestinal gas and Diarrhea	3.15
5	Upper respiratory tract infections • Cough and related products • Common cold, Sore Throat, Rhinitis (hay fever) and allergy products	3.15
6	Common eye problems • Eye surface Disorders: Dry eye, Red Eye, Loose Foreign Substances in the Eye, Minor Eye Irritation • Chemical burn· Eyelid disorders: Contact dermatitisCommon ear problems • Ear wax impaction • Water-clogged ears • Dermatological disorders of the ear (contact dermatitis)Boils	23.15
7	Dermatology (1) • Fungal skin infection (athlete's foot) Acne Vulgaris	3.15
8	Dermatology (2) • Atopic Dermatitis (Eczema) • Contact DermatitisScaly Dermatoses	3.15
9	Dermatology (3) • Warts and verrucas, Corns and calluse • Parasitic skin diseases (Pediculosis) • Home Testing and Monitoring DevicesPregnancy Tests	3.15

No	List of Topics	Contact Hours
10	Minor Burns &Wounds Care OTC Drug abuse OTC drug interactions Drug combinations	3.15
11	Poster presentation	3.15
	Total	**34.65**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	21
2	**Laboratory/Studio**	10.5
3	**Tutorial**	--
4	**Others (specify): Poster presentation**	3.15
	Total	34.65

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Mid-Term (written test)**	6	20%
2	**Simulated pharmacy (oral test)**	4-14	20%
3	**Poster presentation (oral presentation)**	15	10%
4	**Final Exam (written test)**	17	50%

7. Learning Resources

1	**Required Textbooks**	a. Laurence L.Brunton (eds.): Goodman and Gilman's Pharmacological Basis of Therapeutics, 13th. Edition, 2017, McGraw-Hill, New York. ISBN-13: 9781259584749 b. Bertram G. Katzung, Susan B. Masters and Anthony J. Trevor (eds). Basic and Clinical Pharmacology, 15th Edition, 2021, McGraw Hill Lang, New York. c. Rang and Dale's Pharmacology, Rang HP, Ritter JM, Flower RJ, Henderson G (eds). 9th Edition, 2020, Churchhill Livingstone, London.
2	**Essential References Materials**	▪ Lippincott Illustrated Reviews: Pharmacology (Lippincott Illustrated Reviews Series). 8th Ed. 2022. Williams and Wilkins Publisher Co., N.Y.ISBN-13: 978-1451191776 ISBN-10:1451191774 ▪ Pelletier, Catherine: Lange Smart Charts Pharmacology 2/E Paperback – August 5, 2015. ISBN-13: 978-0071774369 ISBN-10: 007177436X.
3	**Electronic Materials**	▪ Pubmed.com ▪ http://www.library.qu.edu.sa/Pages/default.aspx ▪ http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about▪ http://accesspharmacy.mhmedical.com/ss/About.aspx ▪ http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx ▪ http://search.proquest.com
4	**Other Learning Materials**	N/A

Introductory pharmacy practice experience-1

Course Name: Introductory pharmacy practice experience-1	الخبرة العملية الصيدلانية التمهيدية-1	إسم المقرر:
Course Code & No.: PHP281	PHP281	رقم المقرر ورمزه:
Credits:1(0+0+1)	(0+0+1)1	عدد الساعات: المعتمدة:
Prerequisite:		المتطلب: السابق:
Level: 4	4	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The field experience unit manages the introductory pharmacy experience-1 course. The unit identifies, selects, and evaluates the training sites (community pharmacies) and coordinates with the preceptors for all training requirements. For a site to be considered a training site, the following information must be collected:

- The site should provide experiences that meet the goals, objectives, and educational outcomes of the course.
- The preceptors should provide time for daily contact with students to provide feedback and the opportunity to ask questions.
- The site demonstrates a caring and compassionate environment with a commitment.
- Each student at the site should be supervised by a preceptor during the rotation.

The preceptor should be a qualified pharmacist with a Saudi commission for health specialties and have well-established experience.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Learning Outcomes	Training Methods/Activities	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the role of the pharmacist in community and hospital pharmacy practice settings.	· Demonstration· Verbal instructions	Evaluation form
1.2	Acquire enough understanding of the laws, regulations, and ethical responsibilities in pharmacy.	· Demonstration · Verbal instructions · Group discussion	Evaluation form
1.3	Understand formulary system and pharmacy inventory management.	· Demonstration · Verbal instructions· Group discussion	Evaluation form

Code	Learning Outcomes	Training Methods/Activities	Assessment Methods
2.0	**Skills**		
2.1	Demonstrate appropriate procedures for processing and dispensing prescribed pharmaceutical products.	· Demonstration · Verbal instructions	Evaluation form
2.2	Perform effective communication skills and drug counseling.	· Demonstration · Verbal instructions· Patient interview/counselling	Evaluation form

4.Field Experience Implementation

a. Supervision and Follow-up Mechanism

The field experience unit of the college of pharmacy is in direct communication with the students, and the practice sites to ensure proper supervision and follow-up on the students training progress. This communication is usually carried out with the field supervisor, and the training department of each training site.

b. Student Support and Guidance Activities

The experiential education unit, field supervisor, teaching staff, and training department at the training site should provide the student with the support and guidance needed to succeed in the rotation.

5. Safety and Risk Management

Potential Risks	Safety Actions	Risk Management Procedures
NA	NA	NA

G. Training Quality Evaluation

EvaluationAreas/Issues	Evaluators	Evaluation Methods
Evaluation of student's performance	Field supervisor	Direct (evaluation form)

Field Experience Learning Outcomes Assessment

a. Students Assessment Timetable

#	Assessment task*	Assessment timing (Week)	Percentageof Total Assessment Score
1	**Final evaluation**	18th week of rotation	100%

#	Assessment task*	Assessment timing (Week)	Percentageof Total Assessment Score
2	**Note: Assessment tasks differ from one rotation to another, and they can include assignments, pharmaceutical compounding, patient counseling etc.**		

b. Assessment Responsibilities

م	Category	Assessment Responsibility
1	**Teaching Staff**	They will track the progress of the students, especially the faculties involved in the experiential education unit.
2	**Field Supervisor**	The field supervisor is assigned from the training site, in this case, community pharmacies. The training instructors are responsible for training, evaluating, and supervising the students.
3	**Others (specify)**	

Level (5)

No.	Course Title	Code/No.
1	Toxicology	PHG 350
2	Patient Assessment Skills	PHP 352
3	Integrated Pharmacotherapy: Cardiovascular	PHP 361
4	Integrated Pharmacotherapy: Respiratory and Immunology	PHP 362
5	Elective course	
6	Foundations of Pharmacy Practice (4)	PHP 319
7	Interprofessional Education	PHP 371
8	Free course	

Toxicology

Course Name: Toxicology	علم السموم	إسم المقرر:
Course Code & No.: PHG 350	PHG 350	رقم المقرر ورمزه:
Credits: 3 hours (2+0+1)	hours (2+0+1) 3	عدد الساعات: المعتمدة:
Prerequisite: PHG 241	PHG241	المتطلب: السابق:
Level: 5	5	المستوى:
Course type: Required	مطلوب	نوع المقرر:

1. Course Description

This course is concerned with the basic principle of toxicology and different disciplines of toxicology, the mechanisms of toxicity and management of the common toxicities. Also, it concerned with serious consequences of exposure to drugs and chemicals. In addition, the basic principle of drugs of abuse and management.

2. Course Main Objectives

The course aims to introduce students to:

- This course aims to introduce students to:
- The general principles of toxicology
- The target organ toxicity
- The environmental toxicology
- General principle of drugs of abuse
- Pharmacology of drugs of abuse
- Management of various types of the abused drugs

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	State the general procedures for management of poisoning and drug of abuse	· Lectures· Presentations	MCQ, Short notes, special criteria for presentations
1.2	Define the general mechanisms of the common poisons affecting heart, liver, kidneys, lungs and brain	· Lectures· Presentations	MCQ, Short notes, special criteria for presentations
1.3	Outline the toxicity of the environmental pollutants, the common heavy metals and corrosive poisoning	· Lectures· Presentations	MCQ, Short notes, special criteria for presentations

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.5	Discuss the dependence of Alcohols, Cocain, Khat, Amphetamines, Opioids, Cannabis, Benzodiazepines/ Barbiturates, Hallucinogens	· Lectures· Presentations	MCQ, Short notes, special criteria for presentations
2.0	**Skills**		
2.1	Explain the biochemical and cellular mechanisms that underlie the common toxicities of drugs and chemicals	· Lectures· Presentations	MCQ, Short notes, special criteria for presentations
2.2	Differentiate between the mechanisms involved in drug-induced carcinogenicity	· Lectures· Presentations	MCQ, Short notes, special criteria for presentations
2.3	Explain the toxicity of pesticides commonly used	· Lectures· Presentations	MCQ, Short notes, special criteria for presentations
2.4	Differentiate between different types of tolerance and dependence.	· Lectures· Presentations	MCQ, Short notes, special criteria for presentations
2.5	Distinguish between dependence and withdrawal symptoms of the various drugs of abuse.	· Lectures· Presentations	MCQ, Short notes, special criteria for presentations
3.0	**Values**		
3.1	NA	NA	NA

4. Course Content

No	List of Topics	Contact Hours
1	General principles of management of poisoning and General mechanisms of toxicity, Antidotes and Toxidromes.	4
2	Environmental pollutants and Pesticides	2
3	Corrosive poisoning, Gases poisoning	1
4	Heavy metals poisoning	
5	Groups of drugs that are toxic to Heart, Liver, Kidneys, Lungs and Brain	4

No	List of Topics	Contact Hours
6	Definition of the terms: abused drugs, habituation, tolerance, dependence, addiction and abstinence syndrome, Types of tolerance and dependence, Factors that predispose for drug abuse. Scientific strategies to prevent youth from indulging in the habit of drug abuse.	3
7	Substance abuse (Alcohols, Cocain, Khat, Amphetamines, Opioids, Cannabis, Benzodiazepines/ Barbiturates, Hallucinogens)	15
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	Non
3	**Tutorial**	30
4	**Others (specify)**	Non
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Mid term**	6	30 %
2	**Assignment**	8	10 %
3	**Presentations (cases for training)**	2-11	10 %
4	**Final**	16	50 %

7. Learning Resources

1	**Required Textbooks**	• Casarite and Doulls Toxicity, The Basic Science of Poisoning. 8 edition. 2013. McGraw-Hill. • Olson KR. Poisoning and Drug Overdose. 5th ed. McGraw-Hill. 2006 • Greenberg, M.l. (2003). Occupational, Industrial and Environmental Toxicology. Elsevier Science. N.Y. • El-Tahir, Kamal E.H. Narcotics and Mind Manifesting Drugs. 2002. Dar AI-Iloom, Riyadh, Saudi Arabia. • Hogan, J.A., Gabrielsen, K. and Luna, N. Substance Abuse Prevention: The Intersection of Science and Practice. 2002. Barnes and Noble • Keltner, N.L. and Folkds, D.G. Psychotropic Drugs. 2001. Barnes and Noble.Leon Shargel, Alan H, Munich, Paul F. Suuney, Larry N. Swanson. Comprehensive pharmacy review. (Latest edition).
2	**Essential References Materials**	• Journal of Toxicology and Toxicological science • Reports required for the course are available in the library. • J. addiction • J. psychopharmacology
3	**Electronic Materials**	· www.pubmed.com http://www.drugabuse.gov/ http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx· http://search.proquest.comhttp://www.sciencedirect.com/science/journals/all

Patient assessment Skills

Course Name: Patient assessment Skills	مهارات الفحص السريري	إسم المقرر:
Course Code & No.: PHP 352	PHP 352	رقم المقرر ورمزه:
Credits: 1(1+0+1)	(1+0+1)1	عدد الساعات: المعتمدة:
Prerequisite: PHP 251	PHP 251	المتطلب: السابق:
Level: 5	5	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course focuses mainly on developing the medical skills for patient assessment within pharmacy practice through knowledge and training in patient interviewing, documentation of patient's data, physical assessment techniques and equipment used in assessing patients and interpretation of lab results for body systems

2. Course Main Objectives

This course aims to provide students with:

- Knowledge and skills required for patient interviewing and documentation of patient's data
- Physical assessment techniques and equipment used in assessing patients
- Skills needed for interpretation of lab results for body systems

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize the process of physical assessment of various body parts.	· Lecture	· Assignments· MCQ, short notes and short assay
1.2	Describe the components of clinical laboratory tests required to assess different body organ functions	· Lecture	· Assignments· MCQ, short notes and short assay
2.0	**Skills**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.1	Analyze the various clinical presentation of patients with construction of the differential diagnosis.	· Lecture · Practical	· Assignments· MCQ, short notes, short assay· OSCE
2.2	Interpret the laboratory data of patients.	· Lecture · Practical	· Assignments· MCQ, short notes, short assay· OSCE
2.3	Perform effective physical assessment of patient health status	· Lecture· Practical	· Assignments· MCQ, short notes, short assay· OSCE
2.4	Communicate effectively and sensitively with patients during clinical assessment	· Lecture· Practical	· Assignments· MCQ, short notes, short assay· OSCE
3.0	**Values**		
3.1	Demonstrate ability towards self-learning, reasoning and problem solving	· Lecture· Practical	· Survey · OSCE
3.2	Advocate patient rights to safe and effective medication use in various setting.	· Lecture· Practical	· OSCE
3.3	Demonstrate empathy, professional attitude, ethical behavior, social and cultural awareness and proper judgment in various settings.	· Practical	· OSCE

4. Course Content

No	List of Topics	Contact Hours
1	General examination of the patient	3
2	Vital signs assessment	3
3	Heart and lung examination	3
4	Abdominal examination	3
5	Musculoskeletal examination	3
6	Neurological and mental status examination	3
7	Kidney function tests, electrolytes and Arterial blood gases and acid-base balance	3
8	Liver and gastroenterology tests + Rheumatic disorders tests	3

No	List of Topics	Contact Hours
9	Heart and myocardial infarction tests and Pulmonary function tests	3
10	Hematology (red blood cells, white blood cells, coagulation tests) + Assessment and lab tests for Infectious diseases	3
	Total	**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	15
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others (Training)**	15
	Total	30

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Assignments**	2-9	1o%
2	**Midterm exam**	6	15%
3	**Practical (OSCE**	11	25%
4	**Final**	12	50%

7. Learning Resources

1	**Required Textbooks**	• ·Rhonda M. Jones, Raylene M. Rospond, Lynn Walton Hall. Patient Assessment in Pharmacy Practice. (2015). Lippincott Williams & Wilkins Publishers. • Lee M, (Editor). Basic skills in interpreting laboratory data. 6th edition (2009) ASHP American Society of Health-System Pharmacists a. First Aid Manual, St Andrews' Ambulance Association and the British Red Cross Society, St John Ambulance
2	**Essential References Materials**	• Bickley, L.S. Bates' Guide to Physical Examination and History Taking. Philadelphia: J.B. Lippincott Williams & Wilkins.
3	**Electronic Materials**	• http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about • http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx
4	**Other Learning Materials**	None

Cardiology Integrated Pharmacotherapy

:Course Name Cardiovascular Integrated Pharmacotherapy	العلاج الدوائي المتكامل: الجهاز التنفسي والمناعة	إسم المقرر:
Course Code & No.: PHP 361	PHP 361	رقم المقرر ورمزه:
Credits: 6(5 + 0 + 1)	(1 + 0 + 5)6	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 5	5	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of disease associated with cardiovascular system with concepts of drug action and therapy. The pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis will be placed on drug selection, dosing regimen design and therapeutic drug monitoring to assess the attainment of therapeutic efficacy and avoidance of adverse reactions.

2. Course Main Objectives

The course aims to introduce students to:

1. Describe the pathophysiological processes of diseases affecting the cardiovascular system.
2. Explain the pharmacology of drugs used in the management of cardiovascular diseases.
3. Illustrate the structural activity relationships of drugs used in the management of cardiovascular diseases.
4. Describe the dosage formulations of drugs used in the management of cardiovascular diseases.
5. Provide therapeutic knowledge necessary to manage patients with cardiovascular diseases.
6. Describe appropriate pharmacologic and non-pharmacologic therapies.
7. Discuss rationale, reasonable and practical solution to drug related problems.
8. Describe the desired outcomes of pharmacotherapy.
9. Provide a plan for monitoring drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of cardiovascular diseases.	• Lecture	• MCQs
1.2	Illustrate the metabolism and structure activity relationships of drugs used in the management of cardiovascular diseases.	• Lecture	• MCQs
1.3	Describe the drug delivery and dosage formulations of drugs used in the management of cardiovascular diseases.	• Lecture	• MCQs
1.4	Explain the pharmacology of drugs used in the managment of cardiovascular diseases.	• Lecture	• MCQs
1.5	Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and the prevention and treatment.	• Lecture	• MCQs
2.0	**Skills**		
2.1	Identify and prioritize therapeutic alternatives to individualize patient specific regimens.	• Lecture	• MCQs
2.2	Identify the drug-related problems associated with management of patient with cardiovascular diseases.	• Lecture	• MCQs
2.3	Monitor therapeutic outcomes and adverse effects of drug therapy used in management of patient with cardiovascular diseases.	• Lecture	• MCQs
3.0	**Values**		
3.1	Demonstrate ability to work in group.	• Case studies	• Survey
3.2	Design appropriate care plan for management of patient with different cardiovascular diseases.	• Lecture • Case studies	• MCQs
3.3	Demonstrate ability for self-learning.	• Case studies	• Survey

4. Course Content

No	List of Topics	Contact Hours
1	Hypertension: (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology and pharmacy practice)	
2	Dyslipidaemia: (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	
3	Heart failure (Pathophysiology, medicinal chemistry, pharmacology, and pharmacy practice)	
4	Arrhythmia (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	
5	Ischaemic heart diseases (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	
6	Peripheral arterial diseases (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	
Total* 1 contact hour = 65 minutes		**64**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	54
2	**Laboratory/Studio**	
3	**Tutorial**	22
4	**Others (specify)**	
	Total	76

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Quizzes**	3,5,9	45%
2	**Mid-Term Exam**	13	20%
3	**Final exam**	16	35%

7. Learning Resources

1	**Required Textbooks**	Basic & Clinical Pharmacology, Editors: Bertram G. Katzung, Susan B. Masters, Anthony J. Trevor, Publisher: McGraw Hill, Edition: 12th edition, Pharmacology Lippincott's Illustrated Reviews Editors: R A Harvey, MA Clark, R Finkel, J A Rey, K Whalen, Publisher: Wolters Kluwer/Lippincott Williams & Wilkins Edition: 5th edition Applied Biopharmaceutics and Pharmacokinetics, Editor: Leon Shargel, Susana WU-Pong and Andrew B.C. YU, Publisher: Mac Grew Hill , International Edition Edition: 6th edition An Introduction to Medicinal Chemistry Editors: Graham L. Patrick, Publisher: Oxford University Press, Edition: 5th edition Pathological basis of disease Editors: kumar, Abbas, Aster , Publisher: Elsevier saundersEdition: 9th Applied Therapeutics. The Clinical Use of Drugs. 11th edition Mary Anne Koda-Kimble1 Lloyd Yee Young1 Wayne A. Kradjan1 B. Joseph Guglielmo. (2018). Lippincott Williams & Wilkins Publishers. a. Pharmacotherapy: A Pathophysiologic Approach. 11th edition (2017) Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey.
2	**Essential References Materials**	▪ None
3	**Electronic Materials**	http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx http://search.proquest.com/
4	**Other Learning Materials**	None

Respiratory / Immunological Integrated Pharmacotherapy

Course Name: Respiratory and Immunological diseases Integrated Pharmacotherapy	العلاج الدوائي المتكامل: الجهازالتنفسي والمناعة	إسم المقرر:
Course Code & No.: PHP 362	PHP 362	رقم المقرر ورمزه:
Credits: 4(3 + 0 + 1)	(3+0+1) 4	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 5	5	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course aims to integrate the pathophysiologic abnormalities of respiratory and immunological diseases with concepts of pharmacological drug action and pharmacotherapeutic approaches. The state-of-the-art pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis will be placed on selecting and designing patient-specific evidence-based pharmacotherapeutic regimen with monitoring of therapy, patient education and counselling to achieve therapeutic efficacy and quality use of medicine and to avoid any untoward or adverse medical event.

2. Course Main Objectives

The course aims to introduce students to:

- Describe the pathophysiological processes of respiratory and immunological diseases
- Explain the pharmacology of drugs employed in the treatment of diseases affecting the respiratory and immunological system
- Illustrate the structural features and activity relationships of drugs employed in the treatment of diseases affecting the respiratory and immunological system
- Describe the pharmacokinetics of drugs employed in the treatment of diseases affecting the respiratory and immunological system
- Describe the evidence-based treatment guidelines for respiratory and immunological diseases
- Identify drug and disease-related problems in respiratory and immunological diseases and suggest appropriate recommendations.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Describe the pathophysiological processes of respiratory and immunological diseases	Lectures	MCQs, short notes, patient cases
1.2	Explain the pharmacology of drugs employed in the treatment of respiratory and immunological diseases	Lectures	MCQs, short notes, patient cases
1.3	Illustrate the structural features and activity relationships of drugs employed in the treatment of respiratory and immunological diseases	Lectures	MCQs
1.4	Describe the pharmacokinetics of drugs employed in the treatment of respiratory and immunological diseases	Lectures	MCQs, short notes
1.5	Describe therapeutic goals, drug and non-drug therapies, risk factors and therapeutic goals in patient cases	Lectures, Team-based learning (TBL)	MCQs, short notes, patient cases, TBL
2.0	**Skills**		
2.1	Identify drug related problems in patient cases by applying evidence based pharmacotherapy guidelines	Lectures, TBL	MCQs, short notes, patient cases, TBL
2.2	Prepare a pharmacotherapeutic care plan for the patient with patient education, monitoring and follow up	Lectures, TBL	MCQs, short notes, patient cases, TBL
3.0	**Values**		
3.1	Evaluate own learning and performance, make decision regarding self-development and practice reflective and independent thinking to effectively manage and respond to routine or unanticipated circumstances.	TBL	TBL
3.2	Demonstrate empathy, professional attitude, ethical behaviour, social and cultural awareness and proper judgment in various settings.	Lectures	TBL, OSCE

4. Course Content

No	List of Topics	Contact Hours
1	Bronchial Asthma: (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology and pharmacy practice)	8

No	List of Topics	Contact Hours
2	Chronic Obstructive Pulmonary Disease: (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	8
3	Systemic lupus erythematosus (Pathophysiology, medicinal chemistry, pharmacology, and pharmacy practice)	8
4	Solid Organ Transplantation (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	8
5	Anaphylaxis/ Drug sensitivity reactions (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	8
Total* 1 contact hour = 65 minutes		**40**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	10
4	**Others (specify)**	
	Total	**40**

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Individual reading assessment test (TBL)**	5	5%
2	**Group reading assessment test (TBL)**	5	5%
3	**Mid-Term Exam**	6	20%
4	**OSCPE exam**	11	20%
5	**Final exam**	11-12	50%

7. Learning Resources

1	Required Textbooks	Basic & Clinical Pharmacology, Editors: Bertram G. Katzung, Susan B. Masters, Anthony J. Trevor, Publisher: McGraw Hill, Edition: 12th edition, Pharmacology Lippincott's Illustrated Reviews Editors: R A Harvey, MA Clark, R Finkel, J A Rey, K Whalen, Publisher: Wolters Kluwer/Lippincott Williams & WilkinsEdition: 5th editionApplied Biopharmaceutics and Pharmacokinetics, Editor: Leon Shargel, Susana WU-Pong and Andrew B.C. YU, Publisher: Mac Grew Hill , International Edition Edition: 6th edition An Introduction to Medicinal Chemistry Editors: Graham L. Patrick, Publisher: Oxford University Press, Edition: 5th editionPathological basis of disease Editors: kumar, Abbas, Aster , Publisher: Elsevier saundersEdition: 9th Applied Therapeutics. The Clinical Use of Drugs. 11th edition Mary Anne Koda-Kimble1 Lloyd Yee Young1 Wayne A. Kradjan1 B. Joseph Guglielmo. (2018). Lippincott Williams & Wilkins Publishers. a. Pharmacotherapy: A Pathophysiologic Approach. 11th edition (2017) Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey.
2	Essential References Materials	▪ None
3	Electronic Materials	http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx http://search.proquest.com/
4	Other Learning Materials	None

Foundations of Pharmacy Practice (4)

Course Name: Foundations of Pharmacy Practice (4)	أسس ممارسة الصيدلة 4	إسم المقرر:
Course Code & No.: PHP319	PHP319	رقم المقرر ورمزه:
Credits: 2 (1+0+1)	(1+0+1) 2	عدد الساعات: المعتمدة:
Prerequisite: PHP218	PHP218	المتطلب: السابق:
Level: 5	5	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to introduce students to the skills required to practice in institutional and community pharmacy settings. Students will be introduced to inter-professional collaboration and the professional practice of pharmaceutical care and its components, to be able to identify, resolve or prevent patient drug therapy problems.

2. Course Main Objective

This course aims to provide students with:
Knowledge and skills necessary for applying the concepts and processes of pharmaceutical care
Communication skills necessary to work in a health care team
Knowledge and practices of patient safety

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the concept of pharmaceutical care practice	Lectures and class room discussion.	Short Notes, MCQ's
1.2	Recognize strategies for effective inter-professional collaboration and communication	Lectures and class room discussion.	Final exam Short Notes, MCQ's
1.3	Recognize various types of patient safety incidences	Lectures and class room discussion.	Short Notes, MCQ's
2.0	**Skills**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.1	Collect and evaluate patient's specific medical information	Lectures and class room discussion.	MCQs, short notes, case studies, OSCE
2.2	Identify actual and potential drug therapy problems in a given patient case	Lectures and class room discussion.	MCQs, short notes, case studies, OSCE
2.3	Create, implement, monitor and document a specific a pharmaceutical care plan for a given patient case	Lectures and class room discussion.	MCQs, short notes, case studies, OSCE
2.4	Work as a part of a health care team to provide patient centered care	Lectures and class room discussion.	MCQs, short notes, case studies, OSCE
2.5	Effectively communicate pharmaceutical care plan to patients	Lectures and class room discussion.	Survey
2.6	Effectively communicate pharmaceutical care plan to healthcare professionals	Lectures and class room discussion.	Presentation, OSCE
2.7	Utilize different causation theories and models to analyze patient safety incidence	Lectures and class room discussion.	Presentation, OSCE
3.0	**Values**		
3.1	Developing collaborative relationship , Demonstrating Leadership skills	Lectures and class room discussion.	OSCE
3.2	Identify different research methods used to identify and standardize different patient safety incidence	Lectures and class room discussion.	OSCE
3.3	Identify actual , potential drug therapy problems in a given patient case	Lectures and class room discussion.	OSCE
3.4	Recognize strategies for effective inter-professional collaboration and communication	Lectures and class room discussion.	OSCE, Presentation,
3.5	Demonstrating empathy, professional attitude, ethical , social and cultural awareness during patient case discussions	Lectures and class room discussion.	OSCE

4. Course Content

No	List of Topics	Contact Hours
1	Pharmaceutical care concept and Identifying drug therapy problems	3
2	Patient data collection and evaluation	3

No	List of Topics	Contact Hours
3	Patient care plan development Documentation	3
4	Developing collaborative relationships	3
5	Pharmaceutical care for patients specific disease	3
6	Wellness and health promotion	3
7	Marketing pharmaceutical care and Reimbursement	3
8	Measuring change and outcomes in your practice	3
9	Re-engineering the pharmacy lay out, Creating the infrastructure to pharmaceutical care and Obstacles to pharmaceutical care	3
10	Introduction to patient safety and health care	3
1	Types of medical errors	3
12	Introduction to medication safety	3
13	Analysis of incidence causation	3
14	Patient case discussions	6
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	11.92
2	**Laboratory/Studio**	
3	**Tutorial**	23.83
4	**Others (specify)**	
Total		**35.75**

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Mid-term exam**	8	25%
2	**Assignment**	7	10%
3	**OSCE**	15	15%
4	**Final exam**	16	50%

7. Learning Resources

1	**Required Textbooks**	• John P. Rovers and Jay D. Currie (Editors). A Practical Guide to Pharmaceutical Care • Communication Skills in Pharmacy Practice (fifth edition) by Robert S. Beardsley and Carole L Kimberlin, published by Lippincott Williams and Wilkins Pharmacotherapy Casebook: A Patient-Focused Approach 6th edition
2	**Essential References Materials**	None
3	**Electronic Materials**	http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx http://search.proquest.com/
4	**Other Learning Materials**	Medscape application

Interprofessional Education

:Course Name Interprofessional Education	التعليم ما بين المهن	إسم المقرر:
Course Code & No.: PHP 371	PHP 371	رقم المقرر ورمزه:
Credits: 1 (0+0+1)	(0+0+1) 1	عدد الساعات: المعتمدة:
Prerequisite: N/A	N/A	المتطلب: السابق:
Level: 5	5	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The importance of collaborative learning and cooperation between the different professions to improve human health is the main theme throughout the course. The content is concerned from the perspective of the individual as well as the group, and the teacher/educator/leader with a focus on how interprofessional learning may be developed sustainably.

2. Course Main Objectives

The course aims to introduce students to:

- Describe the common definitions and parameters of interprofessional education
- Work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services.
- Explain the roles and responsibilities of other care providers and how the team works together to provide care.
- Observe and describe the appropriate methods of communication between the healthcare
- Manage ethical dilemmas specific to interprofessional patient/population centered care situations
- Demonstrate shared leadership skills when collaborating with other health team members.
- Explain what a work team is and understand what team's do to improve patient outcomes
- Recognize and defuse some conflicts that arise in healthcare teams because of differing values among healthcare professionals

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the philosophy of interprofessional practice	· Lecture	· MCQ · Short notes · Presentation · Case Studies

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Describe the role of other professionals and their roles and responsibilities in patient care and in the health of populations;	· Lecture· Case Studies	· MCQ · Short notes · Presentation · Case Studies
2.0	**Skills**		
2.1	Apply appropriate communication skills with team members, patients and individuals involved in patient care or health promotion;	· Lecture· Case Studies	· MCQ · Short notes · Presentation · Case Studies
2.2	Demonstrate critical thinking, reasoning and problem solving skills.	· Lecture· Case Studies	· MCQ · Short notes · Presentation · Case Studies
2.3	Explore methods of interprofessional collaboration with others	· Lecture· Case Studies	· MCQ · Short notes · Presentation · Case Studies
3.0	**Values**		
3.1	Demonstrate shared leadership skills and team spirit when collaborating with other health team members	· Lecture· Case Studies	· MCQ · Short notes · Presentation · Case Studies
3.2	Demonstrate ability for self-learning.	· Presentation · Case Studies	· MCQ · Short notes · Presentation · Case Studies

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to interprofessional education and its relationship to interprofessional practice and care	3.14
2	Ethics and its role in interprofessional practice	1.57
3	Roles and responsibilities of each health care team member and profession	3.14
4	Communication	3.14
5	Team and team work (team function)	3.14
6	Leadership, conflict management and negotiation	3.14
7	Health promotion	1.57
Total* 1 contact hour = 65 minutes		**17.2**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	10.9
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify): Presentation, Case Studies	6.3
	Total	17.2

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Group presentation	2-11	20%
2	Assignment	3-6	10%
3	Case discussion	4-12	20%
4	Final exam	13	50%

7. Learning Resources

1	Required Textbooks	• Berwick, D. (2011, February). Team-based competencies: Building a shared foundation for education and clinical practice. Washington Plaza Hotel, Thomas Circle NW, Washington, D.C. • Interprofessional Education Collaborative Expert Panel. (2011). Core competencies for interprofessional collaborative practice: Report of an expert panel. Washington, D.C.: Interprofessional Education Collaborative • Interprofessional Education Collaborative (2016) Core competencies for interprofssional collaborative practice: 2016 update a. Frenk, J., Chen, L, Bhutta, Z., Cohen, J., Crisp, N., Evans, T., Fineberg, H., Garcia, P, Ke, Kelley, P., Kistnasamy, B., Meleis, A., Naylor, D., Pablos-Mendez, A., Reddy, S., Scrimshaw, S., Sepulveda, J, Serwadda, D and Zurayk, H. (2010) Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet 376: 1923–58

2	Essential References Materials	▪ None
3	Electronic Materials	http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx http://search.proquest.com/
4	Other Learning Materials	None

Level (6)

No	Course Title	Code/No.
1	Evidence-based Practice (2)	PHP 332
2	Integrated Pharmacotherapy: Endocrinology and Gynecology	PHP 363
3	Integrated Pharmacotherapy: Infectious Diseases	PHP 321
4	Integrated Pharmacotherapy: Nephrology/Urology	PHP 364
5	Introductory Pharmacy Practice Experience (2)	PHP 382
6	Elective course	

Evidence-based Pharmacy (2)

Course Name: Evidence-based Pharmacy (2)	الممرسة المبنية على البراهين (2)	إسم المقرر:
Course Code & No.: PHP332	PHP332	رقم المقرر ورمزه:
Credits: 2(1+0+1)	(1+0+1)2	عدد الساعات: المعتمدة:
Prerequisite: PHP231	PHP231	المتطلب: السابق:
Level: 6	6	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course explores the fundamental aspects of evidence-based practices and drug information. It is designed as an introductory course to teach the student the basic principles of drug information pertaining to retrieval and communication. In addition, the course helps students not only to understand the types of drug information available but also what sources of information are appropriate to use in a variety of situations.

2. Course Main Objectives

The course aims to introduce students to:

- The evidence-based practices and drug information services
- The facilities required for drug information center
- The development of a practice guideline for the best use of medicine.
- The practical application of basic concepts and principles of drug information services

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the principle of drug and poison information center.	LecturesPracticalTutorials	MCQs, Short notesPractical, Cases, Assignment
1.2	Describe the required processes and materials to establish drug Information center or service.	Lecture and tutorial	written exams (MCQs, SEQs, short notes), Written assignment

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	Recognize process of providing drug information to patients and other health care providers.	Lecture and tutorial	written exams (MCQs, SEQs, short notes), Written assignment
2.0	**Skills**		
2.1	Differentiate between different types of drug information resources.	Lecture and tutorial	written exams (MCQs, SEQs, short notes), Written assignment
2.2	Identify various types of requests and the required background information that should be extracted for each type of question.	LecturesPracticalTutorials	written exams (MCQs, SEQs, short notes), Written assignment
2.3	Evaluate and interpret drug information to respond for all types of Request.	LecturesPracticalTutorials	written exams (MCQs, SEQs, short notes), Written assignment
2.4	Show effective self-management in term of time, planning, motivation and personal initiative while dealing with drug and poison information requests.	LecturesPracticalTutorials	Survey
3.0	**Values**		
3.1	Show keeping up-to-date and development of the profession and the ability to adapt to changes in a professional environment.	LecturesPracticalTutorials	Survey

4. Course Content

No	List of Topics	Contact Hours
1	Introduction & Functions Concept + Basic needs to establish a DIC	3:15
2	DI Resources	3:15
3	DI Education and Training	3:15
4	DPIC Publications (Drug Bulletins) + Drug Evaluation Monographs + Drug Use Evaluation	3:15
5	Literature Evaluation + Internet as a DI Source + Journal Clubs	3:15

No	List of Topics	Contact Hours
6	Answering Requests: Searching Strategies for DI in biomedical literature	3:15
7	Answering Requests: Prioritizing of Request + Approach to DI request (receiving, classifying and reconstructing) + formulating an Effective Response	3:00
8	Legal and ethical aspects of drug information services + Investigational Drugs	3:00
9	Controlling DI: Manufacturers-based DI sources + Assessing Drug Promotions	3:00
10	Presentations and Assignments Evaluation	2:00
11	Presentations and Assignments Evaluation	2:00
Total		**32.5**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	21.5
2	**Laboratory/Studio**	5.5
3	**Tutorial**	5.5
4	**Others (specify):**	--
	Total	32.5

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Midterm**	6-8	20 %
2	**Written assignments**	8-10	10%
3	**Presentations**	5-12	10%
4	**Case studies**	5-12	10%
5	**Final exam**	12-13	50 %

7. Learning Resources

1	**Required Textbooks**	▯ Drug Information: A Guide for Pharmacists, 6e. Patrick M. Malone, Meghan J. Malone, Sharon K. Park (2022). McGraw-Hill/Appleton & Lange ▯ Christine Bond (Editor). Evidence-Based Pharmacy. 1st edition (2000). Pharmaceutical Press. David L. Sackett1 Sharon E. Straus, W. ▯ Scott Richardson1 William Rosenberg, R. Brian Haynes, Evidence-Based Medicine: How to Practice and Teach EBM. 2nd edition (2000). Wolfe Pub Ltd
2	**Essential References Materials**	▯
3	**Electronic Materials**	▯ Access Pharmacy▯ Pharmacy Library ▯ Martindale: Complete Drug Reference ▯ Lexicomp Online with AHFS ▯ Facts & Comparison Bundle ▯ ProQuest Database ▯ http://www.library.qu.edu.sa/Pages/default.aspx ▯ http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about ▯ http://accesspharmacy.mhmedical.com/ss/About.aspx ▯ http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx▯ http://search.proquest.com/ ▯ These databases consist of Pharmacy textbooks, multimedia library, Drug therapy cases, Extensive self-assessment, topics in Evidence-Based Pharmacy Practice, Integrated drug database, NAPLEX® review, journal and news, references to primary literature and additional instructor resources.
4	**Other Learning Materials**	▯ Instructor's handouts and lecture slides

Endocrinology and Gynecological Integrated Pharmacotherapy

Course Name: Endocrinology and Gynecology Integrated Pharmacotherapy	العلاج الدوائي المتكامل: الجهازالتنفسي والمناعة	إسم المقرر:
Course Code & No.: PHP 363	PHP 362	رقم المقرر ورمزه:
Credits: 5 (4+0+1)	(4+0+1) 5	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 6	6	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of disease associated with endocrine and gynaecological system with concepts of drug action and therapy. The pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis will be placed on drug selection, dosing regimen design and therapeutic drug monitoring to assess the attainment of therapeutic efficacy and avoidance of adverse reactions.

2. Course Main Objectives

The course aims to introduce students to:

1. Describe the pathophysiological processes of diseases affecting the endocrinological and gynaecological system.
2. Explain the pharmacology of drugs used in the management of endocrinoloical diseases.
3. Illustrate the structural activity relationships of drugs used in the management of endocrinological and gynaecological diseases.
4. Describe the dosage formulations of drugs used in the management of endocrinological and gynaecological diseases.
5. Provide therapeutic knowledge necessary to manage patients with endocrinological and gynaecological diseases.
6. Describe appropriate pharmacologic and non-pharmacologic therapies.
7. Discuss rationale, reasonable and practical solution to drug related problems.
8. Describe the desired outcomes of pharmacotherapy.
9. Provide a plan for monitoring drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of endocrinological and gynaecological diseases.	• Lecture	• MCQs
1.2	Illustrate the metabolism and structure activity relationships of drugs used in the management of endocrinological and gynaecological diseases.	• Lecture	• MCQs
1.3	Describe the drug delivery and dosage formulations of drugs used in the management of endocrinological and gynaecological diseases.	• Lecture	• MCQs
1.4	Explain the pharmacology of drugs used in the managment of endocrinological and gynaecological	• Lecture	• MCQs
1.5	Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and the prevention and treatment.	• Lecture	• MCQs
2.0	**Skills**		
2.1	Identify and prioritize therapeutic alternatives to individualize patient specific regimens.	• Lecture	• MCQs
2.2	Identify the drug-related problems associated with management of patient with endocrinological and gynaecological diseases.	• Lecture	• MCQs
2.3	Monitor therapeutic outcomes and adverse effects of drug therapy used in management of patient with endocrinological and gynaecological diseases.	• Lecture	• MCQs
3.0	**Values**		
3.1	Demonstrate ability to work in group.	• Case studies	• Survey
3.2	Design appropriate care plan for management of patient with different cardiovascular diseases.	• Lecture • Case studies	• MCQs
3.3	Demonstrate ability for self-learning.	• Case studies	• Survey

4. Course Content

No	List of Topics	Contact Hours
1	Hypothalamic and pituitary disorders (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology and pharmacy practice)	6
2	Thyroid disorders, parathyroid and calcium homeostasis : (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	14
3	Adrenal glands disorders (Pathophysiology, medicinal chemistry, pharmacology, and pharmacy practice)	15
4	Diabetes mellitus (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	40
5	Women's health (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice)	15
Total		**90**

No	Activity	Contact Hours
1	**Lecture**	56
2	**Laboratory/Studio**	
3	**Tutorial**	28
4	**Others (specify)**	
Total		84

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**TBL**		30%
2	**Mid-Term Exam**		20%
3	**Final exam**		50%

7. Learning Resources

1	**Required Textbooks**	Basic & Clinical Pharmacology, Editors: Bertram G. Katzung, Susan B. Masters, Anthony J. Trevor, Publisher: McGraw Hill, Edition: 12th edition, Pharmacology Lippincott's Illustrated Reviews Editors: R A Harvey, MA Clark, R Finkel, J A Rey, K Whalen, Publisher: Wolters Kluwer/Lippincott Williams & Wilkins Edition: 5th edition Applied Biopharmaceutics and Pharmacokinetics, Editor: Leon Shargel, Susana WU-Pong and Andrew B.C. YU, Publisher: Mac Grew Hill , International Edition Edition: 6th edition An Introduction to Medicinal Chemistry Editors: Graham L. Patrick, Publisher: Oxford University Press, Edition: 5th edition Pathological basis of disease Editors: kumar, Abbas, Aster , Publisher: Elsevier saunders Edition: 9th Applied Therapeutics. The Clinical Use of Drugs. 11th edition Mary Anne Koda-Kimble1 Lloyd Yee Young1 Wayne A. Kradjan1 B. Joseph Guglielmo. (2018). Lippincott Williams & Wilkins Publishers. a. Pharmacotherapy: A Pathophysiologic Approach. 11th edition (2017) Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey.
2	**Essential References Materials**	▪ None
3	**Electronic Materials**	http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspxhttp://search.proquest.com/ □
4	**Other Learning Materials**	None

Integrated Pharmacotherapy: infectious disease

Course Name: Integrated Pharmacotherapy: infectious diseases	العلاج الدوائي المتكامل: أمراض المعدية	إسم المقرر:
Course Code & No.: PHP 321	PHP 321	رقم المقرر ورمزه:
Credits: 5 (4+0+1)	(4+0+1) 5	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 6	6	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of disease associated with infectious diseases with concepts of drug action and therapy. The pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis will be placed on drug selection, dosing regimen design and therapeutic drug monitoring to assess the attainment of therapeutic efficacy and avoidance of adverse reactions.

2. Course Main Objectives

Upon successful completion of this course, the students will be able to:

1. Describe the pathophysiological processes of infectious diseases.
2. Explain the pharmacology of drugs used in the management of infectious diseases.
3. Illustrate the structural activity relationships of drugs used in the management of infectious diseases.
4. Describe the dosage formulations of drugs used in the management of infectious diseases.
5. Provide therapeutic knowledge necessary to manage patients with infectious diseases.
6. Describe appropriate pharmacologic and non-pharmacologic therapies.
7. Discuss rationale, reasonable and practical solution to drug related problems.
8. Describe the desired outcomes of pharmacotherapy.
9. Provide a plan for monitoring drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

CLOs	Aligned PLOs
1 Knowledge and Understanding	

CLOs		Aligned PLOs
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of different infectious diseases.	K.1
1.2	Illustrate the metabolism and structure activity relationships of antimicrobials.	K.1
1.3	Describe the drug delivery and dosage formulations of drugs used in the management of infectious diseases.	K.1
1.4	Explain the pharmacology of drugs used in the management of infectious diseases.	K.1
2	**Skills :**	
2.1	Identify and prioritize therapeutic alternatives to individualize patient specific regimens.	S.9
2.2	Identify the drug-related problems associated with management of patient with infectious diseases.	S.6
2.3	Monitor therapeutic outcomes and adverse effects of drug therapy used in management of patient with infectious diseases.	S.9
2.4	Design appropriate care plan for management of patient with different infectious diseases.	S.1
3	**Values:**	
3.1	Demonstrate leadership skills, accountability, and acceptance of responsibility within a team in various settings.	V.1
3.2	Advocate patient rights to safe and effective medication use in various setting.	V.2
3.3	Embrace the inter-professional approach to healthcare practices.	V.4

4. Course Content

No	List of Topics	Contact Hours
1	Introduction and principles of infectious diseases	7.5
2	Pneumonia (community and hospital acquired)	7.5
3	Urinary tract infections (complicated and uncomplicated)	7.5
4	Skin and soft tissue infections (cellulitis, diabetic foot ulcer, necrotizing fasciitis, and animal bite)	7.5
5	Meningitis	7.5

No	List of Topics	Contact Hours
6	Invasive and superficial fungal infections and invasive fungal infections	7.5
7	Tuberculosis (TB)	7.5
8	Sexually transmitted diseases (urethral gonorrhea, non-gonococcal urethritis and syphilis)	7.5
9	Intrabdominal infections (acute cholecystitis and bacterial peritonitis)	7.5
10	Infective endocarditis	7.5
11	Viral infections (herpes, influenza, respiratory syncytial and corona virus)	7.5
13	Vaccinations	7.5
Total		**75**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	60
2	**Laboratory/Studio**	
3	**Tutorial**	15
4	**Others- case discussion**	
Total		75

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**TBL**	4,10	20%
2	**Midterm exam**	8	30%
3	**Final exam**	15	50%

7. Learning Resources

1	**Required Textbooks**	Pathophysiology and pharmacotherapy: • McCorry LK, Zdanowicz MM, Gonnella CY. Essentials of Human Physiology and Pathophysiology for Pharmacy and Allied Health. Routledge; 2018 Dec 21 • Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey. Pharmacotherapy: A Pathophysiologic Approach. 11 th edition (2017). McGraw-Hill/Appleton & Lange. • Chisholm-Burns, Marie A., Barbara G. Wells, and Terry L. Schwinghammer. Pharmacotherapy principles and practice. McGraw-Hill, 2019. • Schwinghammer, T. L., In Koehler, J. M., In Borchert, J. S., & In Slain, D. (2017). Pharmacotherapy casebook: A patient-focused approach. 10 the edition. Pharmacology: • Laurence L.Brunton (eds.): Goodman and Gilman's Pharmacological Basis of Therapeutics, 12th. Ed., 2011, McGraw-Hill, New York. ISBN-13: 978-0071624428, ISBN-10: 0071624422 • Bertram G. Katzung, Susan B. Masters and Anthony J. Trevor (eds). Basic and Clinical Pharmacology, 12th Edition, 2012, McGraw Hill Lang, New York. ISBN-13: 978-0071764018 ISBN-10: 0071764011 • Lippincott Illustrated Reviews: Pharmacology (Lippincott Illustrated Reviews Series). 6th Ed. 2014. Williams and Wilkins Publisher Co., N.Y. ISBN-13: 978-1451191776 ISBN-10: 1451191774 • Paul Vanhoutte (Editor): Cardiovascular Pharmacology: Heart and circulation, Volume 59 (Advances in Pharmacology) Hardcover – November 4, 2010, ISBN-13: 978-0123849038 ISBN-10: 9780123849038 Medicinal chemistry: • Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry • Foy's Principle of medicinal chemistry, David A. Williams, Lippincott: New York • Burger's Medicinal Chemistry and Drug Discovery: Donald J., Abraham, John Wiley & Sons, Inc.

2	Essential References Materials	• Infectious disease society of America practice guidelines https://www.idsociety.org/practice-guideline/practice-guidelines/#/date_na_dt/DESC/0/+/
3	Electronic Materials	• Saudi digital library https://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl • Access pharmacy https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/
4	Other Learning Materials	None

Integrated Pharmacotherapy: Nephrology and Urology.

Course Name: Integrated Pharmacotherapy: Nephrology .and Urology	العلاج الدوائي المتكامل : امراض الكلي و المسالك البولية	إسم المقرر:
Course Code & No.: PHP364	PHP364	رقم المقرر ورمزه:
Credits: 4 (3+0+1)	(3+0+1) 4	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 6	6	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of disease associated with urinary tract and male reproductive systems with concepts of drug action and therapy. The pharmacotherapy is reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis is placed on drug selection, dosing regimen design and therapeutic drug monitoring to assess the attainment of therapeutic efficacy and avoidance of adverse reactions

2. Course Main Objectives

The course aims to introduce students to:

- Describe the pathophysiological processes of diseases affecting the urinary tract and male reproductive systems.
- Explain the pharmacology of drugs used in the management of urinary tract and male reproductive systems disorders.
- Illustrate the structural activity relationships of drugs used in the management of urinary tract and male reproductive systems disorders.
- Describe the dosage formulations of drugs used in the management of urinary tract and male reproductive systems disorders.
- Provide therapeutic knowledge necessary to manage patients with urinary tract and male reproductive systems disorders.
- Describe appropriate pharmacologic and non-pharmacologic therapies.
- Discuss rationale, reasonable and practical solution to drug related problems.
- Describe the desired outcomes of pharmacotherapy.
- Provide a plan for monitoring drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of urinary tract and male reproductive systems disorders	Lecture	MCQs
1.2	Illustrate the metabolism and structure activity relationships of drugs used in the management of urinary tract and male reproductive systems disorders	Lecture	MCQs
1.3	Describe the drug delivery and dosage formulations of drugs used in the management of urinary tract and male reproductive systems disorders	Lecture	MCQs
1.4	Explain the pharmacology of drugs used in the managment of urinary tract and male reproductive systems disorders.	Lecture	MCQs
1.5	Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and the prevention and treatment.	Lectures, Team Based Learnings (TBL)	MCQs
2.0	**Skills**		
2.1	Identify and prioritize therapeutic alternatives to individualize patient specific regimens.	Lecture	Short notes, MCQs, Cases
2.2	Identify the drug-related problems associated with management of patient with urinary tract and male reproductive systems disorders	Lectures, TBL	Short notes, MCQs, Cases
2.3	Monitor therapeutic outcomes and adverse effects of drug therapy used in management of patient with urinary tract and male reproductive systems disorders.	Lectures, TBL	Short notes, MCQs, Cases

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.4	Design appropriate care plan for management of patient with urinary tract and male reproductive systems disorders.	Lectures, TBL	Short notes, MCQs, Cases
3.0	**Values**		
3.1	Demonstrate ability to work in group.	TBL	MCQs, Cases
3.2	Demonstrate ability for self-learning.	TBL	MCQs, Cases

4. Course Content

No	List of Topics	Contact Hours
	Note: Covering of topics according to departments:· • Pathophysiology: ▪ Pathogenesis, ▪ Risk factors, and Epidemiology ▪ Complications, and ▪ Clinical presentation of the disease.· • Medicinal Chemistry: ▪ Illustrate the activity -structure relationships and (efficacy, onset of action, and duration as related to the drug chemical structure) ▪ Illustrate the Elimination-structure relationships of drugs used in the management of the disease. (metabolism, excretion, and distribution as related to the drug chemical structure) • Pharmaceutics: ▪ Describe the drug delivery systems of drugs used in the management of the disease and ▪ Describe the dosage formulations of drugs used in the management of the disease. ▪ Describe the drug delivery systems of drugs as related to absorption of drugs • Pharmacology: Explain the pharmacology of drugs used in the management of the course disease includes: ▪ Mechanisms of action, Onset and duration of action, ▪ Pharmacokinetics (Distribution, Metabolism, and Excretion) ▪ Indications, ▪ Side effects, and ▪ Contraindications.	

No	List of Topics	Contact Hours	
	• Pharmacy Practice: ▪ Role of pharmacists according to legal, ethical and professional standards in promoting health, prevention, treatment, and Patient education. ▪ Identify and prioritize therapeutic alternatives to individualize patient specific regimens (care-plan). ▪ Identify the drug-related problems associated with the disease. ▪ Monitor therapeutic outcomes (efficacy and safety). ▪ Demonstrate ability for self-learning and ability to work in groups.		
1	Fluid, electrolytes, and acid-based disorders	Pathophysiology	3
		Medic. Chemistry	2
		Pharmaceutics	2
		Pharmacology	3
		Pharmacy Practice	5
2	Kidney disorders	Pathophysiology	3
		Medic. Chemistry	2
		Pharmaceutics	2
		Pharmacology	3
		Pharmacy Practice	10
3	Erectile dysfunction	Pathophysiology	2
		Medic. Chemistry	1
		Pharmaceutics	1
		Pharmacology	2
		Pharmacy Practice	4
4	Urinary incontinence	Pathophysiology	3
		Medic. Chemistry	2
		Pharmaceutics	2
		Pharmacology	3
		Pharmacy Practice	5
5	Benign prostatic hypertrophy	Pathophysiology	1
		Medic. Chemistry	1
		Pharmaceutics	1
		Pharmacology	1.5
		Pharmacy Practice	3

No	List of Topics	Contact Hours
6	Diabetes insipidus and SIADH	Pathophysiology1Medic. Chemistry1Pharmaceutics1Pharmacology1.5Pharmacy Practice3
	Total	**75**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	45
2	**Laboratory/Studio**	--
3	**Tutorial**	30
4	**Others (specify):**	--
	Total	75

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Individual reading assessment test**	4-8-10	15 %
2	**Group reading assessment test**	4-8-10	15%
3	**Midterm exam**	6	20 %
4	**Final exam**	12-13	50 %

7. Learning Resources

1	Required Textbooks	Pathophysiology and pharmacotherapy: • McCorry LK, Zdanowicz MM, Gonnella CY. Essentials of Human Physiology and Pathophysiology for Pharmacy and Allied Health. Routledge; 2018 Dec 21. • Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey. Pharmacotherapy: A Pathophysiologic Approach. 11 th edition (2017). McGraw‐Hill/Appleton & Lange. • Chisholm-Burns, Marie A., Barbara G. Wells, and Terry L. Schwinghammer. Pharmacotherapy principles and practice. McGraw-Hill, 2019. • Schwinghammer, T. L., In Koehler, J. M., In Borchert, J. S., & In Slain, D. (2017). Pharmacotherapy casebook: A patient-focused approach. 10 the edition. • Koda-Kimble and Young's Applied Therapeutics: The Clinical Use of Drugs 10th Edition, 2018, by LIPPINCOTT WILLIAMS & WILKINS, a WOLTERS KLUWER • Pharmacology:· • Laurence L.Brunton (eds.): Goodman and Gilman's Pharmacological Basis of Therapeutics, 12th. Ed., 2011, McGraw-Hill, New York. ISBN-13: 978-0071624428, ISBN-10: 0071624422 • Bertram G. Katzung, Susan B. Masters and Anthony J. Trevor (eds). Basic and Clinical Pharmacology, 12th Edition, 2012, McGraw Hill Lang, New York. ISBN-13: 978-0071764018 ISBN-10: 0071764011 • Lippincott Illustrated Reviews: Pharmacology (Lippincott Illustrated Reviews Series). 6th Ed. 2014. Williams and Wilkins Publisher Co., N.Y. ISBN-13: 978-1451191776 ISBN-10: 1451191774 • Paul Vanhoutte (Editor): Cardiovascular Pharmacology: Heart and circulation, Volume 59 (Advances in Pharmacology) Hardcover – November 4, 2010, ISBN-13: 978-0123849038 ISBN-10: 9780123849038 • Medicinal chemistry: • Wilson and Gisvold’s Textbook of Organic Medicinal and Pharmaceutical Chemistry • Foy’s Principle of medicinal chemistry, David A. Williams, Lippincott: New York • Burger’s Medicinal Chemistry and Drug Discovery: Donald J., Abraham, John Wiley & Sons, Inc. • Pharmaceutics: Required Textbooks: Ansel’s Pharmaceutical dosage forms and drug delivery systems: 2010 – edition 10 – Loyd Allen, Nicholas Popovich and Howard Ansel

2	Essential References Materials	
3	Electronic Materials	⊠ Saudi digital library ⊠ https://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl ⊠ Access pharmacy ⊠ https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/
4	Other Learning Materials	N/A

Introductory Pharmacy Practice Experience-2

Course Name: Introductory Pharmacy Practice Experience-2	الخبرة العملية الصيدلانية التمهيدية-2	إسم المقرر:
Course Code & No.: PHP382	PHP382	رقم المقرر ورمزه:
Credits:1(0+0+1)	(0+0+1)1	عدد الساعات: المعتمدة:
,Prerequisite: PHP281 PHP215	PHP281, PHP215	المتطلب: السابق:
Level: 6	6	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The field experience unit manages the introductory pharmacy experience-2 course. The unit identifies, selects, and evaluates the training sites (hospital pharmacies) and coordinates with the preceptors for all training requirements. For a site to be considered a training site, the following information must be collected:

- The site should provide experiences that meet the goals, objectives, and educational outcomes of the course.
- The preceptors should provide time for daily contact with students to provide feedback and the opportunity to ask questions.
- The site demonstrates a caring and compassionate environment with a commitment.
- Each student at the site should be supervised by a preceptor during the rotation.

The preceptor should be a qualified pharmacist with a Saudi commission for health specialties and have well-established experience.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Learning Outcomes	Training Methods/Activities	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the role of the pharmacist in community and hospital pharmacy practice settings.	· Demonstration· Ve rbal instructions	Evaluation form
1.2	Acquire enough understanding of the laws, regulations, and ethical responsibilities in pharmacy.	· Demonstration · Verbal instructions · Group discussion	Evaluation form
1.3	Understand formulary system and pharmacy inventory management.	· Demonstration · Verbal instructions · Group discussion	Evaluation form

Code	Learning Outcomes	Training Methods/Activities	Assessment Methods
2.0	**Skills**		
2.1	Demonstrate appropriate procedures for processing and dispensing prescribed pharmaceutical products.	· Demonstration · Verbal instructions	Evaluation form
2.2	Perform effective communication skills and drug counseling.	· Demonstration · Verbal instructions· Patient interview/counselling	Evaluation form

4. Field Experience Implementation

a. Supervision and Follow-up Mechanism

The field experience unit of the college of pharmacy is in direct communication with the students, and the practice sites to ensure proper supervision and follow-up on the students training progress. This communication is usually carried out with the field supervisor, and the training department of each training site.

b. Student Support and Guidance Activities

The experiential education unit, field supervisor, teaching staff, and training department at the training site should provide the student with the support and guidance needed to succeed in the rotation.

Field Experience Learning Outcomes Assessment

a. Students Assessment Timetable

#	Assessment task*	Assessment timing (Week)	Percentageof Total Assessment Score
1	Final evaluation	18th week of rotation	100%
2	Note: Assessment tasks differ from one rotation to another, and they can include assignments, pharmaceutical compounding, patient counseling etc.		

b. Assessment Responsibilities

م	Category	Assessment Responsibility
1	**Teaching Staff**	They will track the progress of the students, especially the faculties involved in the experiential education unit.
2	**Field Supervisor**	The field supervisor is assigned from the training site, in this case, community pharmacies. The training instructors are responsible for training, evaluating, and supervising the students.
3	**Others (specify)**	

Level (7)

No	Course Title	Code/No.
1	Applied Pharmacokinetics	PHP 441
2	Integrated Pharmacotherapy: Neurology	PHP 465
3	Integrated Pharmacotherapy: Psychiatry	PHP 466
4	Integrated Pharmacotherapy: Hematology/Oncology	PHP 427
5	Graduation Project	PHP 434
6	Pharmacoepidemiology and Medication Safety	PHP 491
7	Pharmacoeconomics	PHP 492
8	Elective course	

Applied Pharmacokinetics

:Course Name Applied Pharmacokinetics	حركية الدواء التطبيقية	إسم المقرر:
Course Code & No.: PHP 441	PHP441	رقم المقرر ورمزه:
Credits:2(1+0+1)	(1+0+1)2	عدد الساعات: المعتمدة:
,Prerequisite: MATHS135 PHT231	MATHS135,PHT231	المتطلب: السابق:
Level: 7	7	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course introduces the student to principles of monitoring drug therapy for those involved in the interpretation of drug levels in a patient care setting. Pharmacokinetics of commonly used and low-therapeutic-index drugs are emphasized in this course

2. Course Main Objectives

The course aims to introduce students to:

The Concepts of Clinical Pharmacokinetics and Therapeutic Drug Monitoring (TDM).

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize disease states, conditions and drugs that alter pharmacokinetics of a narrow therapeutic-index drugs such as (gentamicin, tobramycin, netilmicin, and amikacin, vancomycin, digoxin, lidocaine, procainamide, quinidine, carbamazepine, phenytoin, phenobarbital, valproic acid, cyclosporine, tacrolimus, theophylline, lithium) in a given patients.	TBL	MCQS, Case study, Short note

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Utilize population-based pharmacokinetic parameters to calculate an appropriate initial dosage regimen for a given patient.	TBL	MCQS, Case study, Short note
2.2	Utilize patient specific pharmacokinetic parameters to alter an existing dosage regimen.	TBL	MCQS, Case study, Short note
2.3	Use computational tools such as Pharmacokinetics program to calculate a dosage regimen for a given patient.	Kinetic for Windows software	Observation & Survey
3.0	**Values**		
3.1	Demonstrate ability to work as part of a team	TBL	Survey
3.2	Demonstrate ability to take responsibility towards self-learning.	TBL	MCQS, Case study, Short note, survey

4. Course Content

No	List of Topics	Contact Hours
1	Introduction	3.20
2	TDM of digoxin + Lab	3.20
3	TDM of lidocaine + Lab	3.20
4	TDM of procainamide & quinidine + Lab	3.20
5	TDM of tacrolimus and cyclosporine + Lab	3.20
6	TDM of valproic acid + Lab	3.20
7	TDM of phenytoin + Lab	3.20
8	TDM of Phenobarbital & carbamazepine + Lab	3.20
9	TDM of aminoglycoside antibiotics + Lab	3.20
10	TDM of vancomycin + Lab	3.20
11	TDM of Lithium & Theophylline + Lab	3.20
Total		**35.20**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Team-based learning**	24.2
2	**Laboratory/Studio: Training on software application**	11
3	**E-learning**	
4	**Others (specify)**	
	Total	35.2

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Team-based Learning**	2-11	35%
2	**Mid-Term Exam (written)**	6	15%
3	**Final Exam (written)**	12	50%

7. Learning Resources

1	**Required Textbooks**	a. Larry A. Bauer. Applied Clinical Pharmacokinetics. McGraw-Hilll/Appleton & Lange. Third Edition
2	**Essential References Materials**	▪ None
3	**Electronic Materials**	http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about
4	**Other Learning Materials**	Kinetic for windows software program

Integrated Pharmacotherapy: Neurological disorders.

Course Name: Integrated :Pharmacotherapy .Neurological disorders	العلاج الدوائي المتكامل : الجهاز العصبي	إسم المقرر:
Course Code & No.: PHP465	PHP465	رقم المقرر ورمزه:
Credits: 4 (3+0+1)	(3+0+1) 4	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 7	7	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of disease associated with Neurological disorders, with concepts of drug action and therapy. The pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis will be placed on drug selection, dosing regimen design and therapeutic drug monitoring to assess the attainment of therapeutic efficacy and avoidance of adverse reactions.

2. Course Main Objectives

The course aims to introduce students to:

- Describe the pathophysiological processes of Neurological disorders.
- Explain the pharmacology of drugs used in the management of Neurological disorders.
- Illustrate the structural activity relationships of drugs used in the management of Neurological disorders.
- Describe the dosage formulations of drugs used in the management of Neurological disorders.
- Provide therapeutic knowledge necessary to manage patients with Neurological disorders.
- Describe appropriate pharmacologic and non-pharmacologic therapies.
- Discuss rationale, reasonable and practical solution to drug related problems.
- Describe the desired outcomes of pharmacotherapy.
- Provide a plan for monitoring drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of Neurological disorders.	Lecture	Short notes, MCQs, Cases
1.2	Illustrate the metabolism and structure activity relationships of drugs used in the management of Neurological disorders.	Lecture	Short notes, MCQs, Cases
1.3	Describe the drug delivery and dosage formulations of drugs used in the management of Neurological disorders.	Lecture	Short notes, MCQs, Cases
1.4	Explain the pharmacology of drugs used in the management of Neurological disorders.	Lecture	Short notes, MCQs, Cases
1.5	Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and the prevention and treatment.	Lectures, Team Based Learnings (TBL)	Short notes, MCQs, Cases
2.0	**Skills**		
2.1	Identify and prioritize therapeutic alternatives to individualize patient specific regimens.	Lecture	Short notes, MCQs, Cases
2.2	Identify the drug-related problems associated with management of patient with Neurological disorders.	Lectures, TBL	Short notes, MCQs, Cases
2.3	Monitor therapeutic outcomes and adverse effects of drug therapy used in management of patient with Neurological disorders.	Lectures, TBL	Short notes, MCQs, Cases
2.4	Design appropriate care plan for management of patient with Neurological disorders.	Lectures, TBL	Short notes, MCQs, Cases
3.0	**Values**		
3.1	Demonstrate ability to work in group.	TBL	Short notes, MCQs, Cases
3.2	Demonstrate ability for self-learning.	TBL	Short notes, MCQs, Cases

4. Course Content

No	List of Topics	Contact Hours
	Note: Covering of topics according to departments: • Pathophysiology: ▪ Pathogenesis, ▪ Risk factors, and Epidemiology ▪ Complications, and ▪ Clinical presentation of the disease. • Medicinal Chemistry: ▪ Illustrate the activity -structure relationships and (efficacy, onset of action, and duration as related to the drug chemical structure) ▪ Illustrate the Elimination-structure relationships of drugs used in the management of the disease. (metabolism, excretion, and distribution as related to the drug chemical structure) • Pharmaceutics: ▪ Describe the drug delivery systems of drugs used in the management of the disease and ▪ Describe the dosage formulations of drugs used in the management of the disease. ▪ Describe the drug delivery systems of drugs as related to absorption of drugs • Pharmacology: Explain the pharmacology of drugs used in the management of the course disease includes: ▪ Mechanisms of action, Onset and duration of action, ▪ Pharmacokinetics (Distribution, Metabolism, and Excretion) ▪ Indications, ▪ Side effects, and ▪ Contraindications. • Pharmacy Practice: ▪ Role of pharmacists according to legal, ethical and professional standards in promoting health, prevention, treatment, and Patient education. ▪ Identify and prioritize therapeutic alternatives to individualize patient specific regimens (care-plan). ▪ Identify the drug-related problems associated with the disease. ▪ Monitor therapeutic outcomes (efficacy and safety). ▪ Demonstrate ability for self-learning and ability to work in groups.	

No	List of Topics	Contact Hours	
1	Migraine Headache disorder	Pathophysiology	2.5
		Medic. Chemistry	1.5
		Pharmaceutics	1.5
		Pharmacology	2.5
		Pharmacy Practice	4
2	Epilepsy and Status Epilepticus	Pathophysiology	2.5
		Medic. Chemistry	1.5
		Pharmaceutics	1.5
		Pharmacology	2.5
		Pharmacy Practice	4
3	Pain	Pathophysiology	2.5
		Medic. Chemistry	1.5
		Pharmaceutics	1.5
		Pharmacology	2.5
		Pharmacy Practice	4
4	Parkinson Disease	Pathophysiology	2.5
		Medic. Chemistry	1.5
		Pharmaceutics	1.5
		Pharmacology	2.5
		Pharmacy Practice	4
5	Alzheimer Disease	Pathophysiology	2.5
		Medic. Chemistry	1.5
		Pharmaceutics	1.5
		Pharmacology	2.5
		Pharmacy Practice	4
Total		**60**	

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	50
2	**Laboratory/Studio**	--
3	**Tutorial**	10
4	**Others (specify):**	--
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Individual reading assessment test**	2-10	15 %
2	**Group reading assessment test**	2-10	15%
3	**Midterm exam**	7-9	20 %
4	**Final exam**	11-13	50 %

7. Learning Resources

1	**Required Textbooks**	Pathophysiology and pharmacotherapy: • McCorry LK, Zdanowicz MM, Gonnella CY. Essentials of Human Physiology and Pathophysiology for Pharmacy and Allied Health. Routledge; 2018 Dec 21. • Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey. Pharmacotherapy: A Pathophysiologic Approach. 11 th edition (2017). McGraw-Hill/Appleton & Lange. • Chisholm-Burns, Marie A., Barbara G. Wells, and Terry L. Schwinghammer. Pharmacotherapy principles and practice. McGraw-Hill, 2019. • Schwinghammer, T. L., In Koehler, J. M., In Borchert, J. S., & In Slain, D. (2017). Pharmacotherapy casebook: A patient-focused approach. 10 the edition. • Koda-Kimble and Young's Applied Therapeutics: The Clinical Use of Drugs 10th Edition, 2013, by LIPPINCOTT WILLIAMS & WILKINS, a WOLTERS KLUWER Pharmacology: • Bertram G. Katzung, Susan B. Masters and Anthony J. Trevor (eds). Basic and Clinical Pharmacology, 12th Edition, 2012, McGraw Hill Lang, New York. ISBN-13: 978-0071764018 ISBN-10: 0071764011 • Lippincott Illustrated Reviews: Pharmacology (Lippincott Illustrated Reviews Series). 6th Ed. 2014. Williams and Wilkins Publisher Co., N.Y. ISBN-13: 978-1451191776 ISBN-10: 1451191774 Medicinal chemistry: • Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry • Foy's Principle of medicinal chemistry, David A. Williams, Lippincott: New York

	Required Textbooks	• Pharmaceutics: Required Textbooks: Ansel's Pharmaceutical dosage forms and drug delivery systems: 2010 – edition 10 – Loyd Allen, Nicholas Popovich and Howard Ansel
2	**Essential References Materials**	
3	**Electronic Materials**	Saudi digital library https://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl Access pharmacy https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/
4	**Other Learning Materials**	N/A

Integrated Pharmacotherapy: Psychiatric disorders.

Course Name: Integrated Pharmacotherapy: Psychiatric .disorders	العلاج الدوائي المتكامل : الطب النفسي	إسم المقرر:
Course Code & No.: PHP466	PHP466	رقم المقرر ورمزه:
Credits: 3 (2+0+1)	(2+0+1) 3	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 7	7	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of disease associated with psychiatric disorders, with concepts of drug action and therapy. The pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis will be placed on drug selection, dosing regimen design and therapeutic drug monitoring to assess the attainment of therapeutic efficacy and avoidance of adverse reactions.

2. Course Main Objectives

The course aims to introduce students to:

- Describe the pathophysiological processes of psychiatric disorders.
- Explain the pharmacology of drugs used in the management of psychiatric disorders.
- Illustrate the structural activity relationships of drugs used in the management of psychiatric disorders.
- Describe the dosage formulations of drugs used in the management of psychiatric disorders.
- Provide therapeutic knowledge necessary to manage patients with psychiatric disorders.
- Describe appropriate pharmacologic and non-pharmacologic therapies.
- Discuss rationale, reasonable and practical solution to drug related problems.
- Describe the desired outcomes of pharmacotherapy.
- Provide a plan for monitoring drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of psychiatric disorders.	Lecture	Short notes, MCQs, Cases
1.2	Illustrate the metabolism and structure activity relationships of drugs used in the management of psychiatric disorders.	Lecture	Short notes, MCQs, Cases
1.3	Describe the drug delivery and dosage formulations of drugs used in the management of psychiatric disorders.	Lecture	Short notes, MCQs, Cases
1.4	Explain the pharmacology of drugs used in the management of psychiatric disorders.	Lecture	Short notes, MCQs, Cases
1.5	Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and the prevention and treatment.	Lectures, Team Based Learnings (TBL)	Short notes, MCQs, Cases
2.0	**Skills**		
2.1	Identify and prioritize therapeutic alternatives to individualize patient specific regimens.	Lecture	Short notes, MCQs, Cases
2.2	Identify the drug-related problems associated with management of patient with psychiatric disorders.	Lectures, TBL	Short notes, MCQs, Cases
2.3	Monitor therapeutic outcomes and adverse effects of drug therapy used in management of patient with psychiatric disorders.	Lectures, TBL	Short notes, MCQs, Cases
2.4	Design appropriate care plan for management of patient with psychiatric disorders.	Lectures, TBL	Short notes, MCQs, Cases
3.0	**Values**		
3.1	Demonstrate ability to work in group.	TBL	Short notes, MCQs, Cases
3.2	Demonstrate ability for self-learning.	TBL	Short notes, MCQs, Cases

4. Course Content

No	List of Topics	Contact Hours
	Note: Covering of topics according to departments: • Pathophysiology: ▪ Pathogenesis, ▪ Risk factors, and Epidemiology ▪ Complications, and ▪ Clinical presentation of the disease. • Medicinal Chemistry: ▪ Illustrate the activity -structure relationships and (efficacy, onset of action, and duration as related to the drug chemical structure) ▪ Illustrate the Elimination-structure relationships of drugs used in the management of the disease. (metabolism, excretion, and distribution as related to the drug chemical structure) • Pharmaceutics: ▪ Describe the drug delivery systems of drugs used in the management of the disease and ▪ Describe the dosage formulations of drugs used in the management of the disease. ▪ Describe the drug delivery systems of drugs as related to absorption of drugs • Pharmacology: Explain the pharmacology of drugs used in the management of the course disease includes: ▪ Mechanisms of action, Onset and duration of action, ▪ Pharmacokinetics (Distribution, Metabolism, and Excretion) ▪ Indications, ▪ Side effects, and ▪ Contraindications. • Pharmacy Practice: ▪ Role of pharmacists according to legal, ethical and professional standards in promoting health, prevention, treatment, and Patient education. ▪ Identify and prioritize therapeutic alternatives to individualize patient specific regimens (care-plan). ▪ Identify the drug-related problems associated with the disease. ▪ Monitor therapeutic outcomes (efficacy and safety). ▪ Demonstrate ability for self-learning and ability to work in groups.	

No	List of Topics	Contact Hours	
1	Anxiety disorders	Pathophysiology	2
		Medic. Chemistry	1
		Pharmaceutics	1
		Pharmacology	2
		Pharmacy Practice	4
2	Mood and sleep disorders	Pathophysiology	2
		Medic. Chemistry	1
		Pharmaceutics	1
		Pharmacology	2
		Pharmacy Practice	4
3	Schezophrenia	Pathophysiology	2
		Medic. Chemistry	1
		Pharmaceutics	1
		Pharmacology	2
		Pharmacy Practice	4
4	Substance abuse	Pathophysiology	2
		Medic. Chemistry	1
		Pharmaceutics	1
		Pharmacology	2
		Pharmacy Practice	4
5	ADHD	Pathophysiology	2
		Medic. Chemistry	1
		Pharmaceutics	1
		Pharmacology	2
		Pharmacy Practice	4
Total		**50**	

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	40
2	**Laboratory/Studio**	--
3	**Tutorial**	10
4	**Others (specify):**	--
	Total	50

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Individual reading assessment test**	2-8-10	15 %
2	**Group reading assessment test**	2-8-10	15%
3	**Midterm exam**	7-9	20 %
4	**Final exam**	11-13	50 %

7. Learning Resources

1	**Required Textbooks**	Pharmacy Practice 1. DiPiro J.T., & Yee G.C., & Posey L, & Haines S.T., & Nolin T.D., & Ellingrod V(Eds.), (2020) Pharmacotherapy: A Pathophysiologic Approach, 11e. McGraw Hill. https://accesspharmacy.mhmedical.com/content.aspx?bookid= 2577§ionid=248129526 2. Joseph DP: Pharmacotherapy: A pathophysiologic approach, 9th edition. 2014. 3. Deno RA, Brodie DC, Rowe TD: The profession of pharmacy: An introductory textbook: 4. Lippincott; 1959. 8. Rosner B: Fundamentals of biostatistics: Duxbury Press; 2011. 5. Applied Clinical Pharmacokinetics 3/E Larry A Bauer, McGrawHill 8 6. Gibaldi's Drug Delivery Systems In Pharmaceutical Care Archana Desai and Mary Lee.200 7. Koda-Kimble and Young's Applied Therapeutics: The Clinical Use of Drugs 10th Edition, 2013, by LIPPINCOTT WILLIAMS & WILKINS, a WOLTERS KLUWER 8. Joseph DP: Pharmacotherapy: A pathophysiologic approach, 9th edition. 2014. Pathophysiology and pharmacotherapy: • McCorry LK, Zdanowicz MM, Gonnella CY. Essentials of Human Physiology and Pathophysiology for Pharmacy and Allied Health. Routledge; 2018 Dec 21.

	Required Textbooks	• Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey • Pharmacotherapy: A Pathophysiologic Approach. 11 th edition (2017). McGrawHill/Appleton & Lange. · Chisholm-Burns, Marie A., Barbara G. Wells, and Terry L. Schwinghammer. Pharmacotherapy principles and practice. McGrawHill, 2019. • Schwinghammer, T. L., In Koehler, J. M., In Borchert, J. S., & In Slain, D. (2017). Pharmacotherapy casebook: A patient-focused approach. 10 the edition. Pharmacology: • Laurence L.Brunton (eds.): Goodman and Gilman's Pharmacological Basis of Therapeutics, 12th. Ed., 2011, McGraw-Hill, New York. ISBN13: 978-0071624428, ISBN-10: 0071624422 • Bertram G. Katzung, Susan B. Masters and Anthony J. Trevor (eds). Basic and Clinical Pharmacology, 12th Edition, 2012, McGraw Hill Lang, New York. ISBN-13: 978-0071764018 ISBN-10: 0071764011 • Lippincott Illustrated Reviews: Pharmacology (Lippincott Illustrated Reviews Series). 6th Ed. 2014. Williams and Wilkins Publisher Co., N.Y. ISBN-13: 978-1451191776 ISBN-10: 1451191774 • Paul Vanhoutte (Editor): Cardiovascular Pharmacology: Heart and circulation, Volume 59 (Advances in Pharmacology) Hardcover – November 4, 2010, ISBN-13: 978-0123849038 ISBN10: 9780123849038 Medicinal chemistry: • Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry • Foy's Principle of medicinal chemistry, David A. Williams, Lippincott: New York • Burger's Medicinal Chemistry and Drug Discovery: Donald J., Abraham, John Wiley & Sons, Inc. Pharmaceutics: • Required Textbooks: Ansel's Pharmaceutical dosage forms and drug delivery systems: 2010 – edition 10 – Loyd Allen, Nicholas Popovich and Howard Ansel
2	**Essential References Materials**	
3	**Electronic Materials**	⍰ Saudi digital libraryhttps://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl ⍰ Access pharmacyhttps://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/
4	**Other Learning Materials**	N/A

Integrated Pharmacotherapy: Hematology/Oncology disorders.

Course Name: Integrated Pharmacotherapy: Hematology/Oncology disorders.	العلاج الدوائي المتكامل : أمراض الدم / الأورام	إسم المقرر:
Course Code & No.: PHP427	PHP427	رقم المقرر ورمزه:
Credits: 4 (3+0+1)	(3+0+1) 4	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 7	7	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of disease associated with Hematology/Oncology disorders, with concepts of drug action and therapy. The pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis will be placed on drug selection, dosing regimen design and therapeutic drug monitoring to assess the attainment of therapeutic efficacy and avoidance of adverse reactions.

2. Course Main Objectives

The course aims to introduce students to:

- Describe the pathophysiological processes of Hematology/Oncology disorders.
- Explain the pharmacology of drugs used in the management of Hematology/Oncology disorders.
- Illustrate the structural activity relationships of drugs used in the management of Hematology/Oncology disorders.
- Describe the dosage formulations of drugs used in the management of Hematology/Oncology disorders.
- Provide therapeutic knowledge necessary to manage patients with Hematology/Oncology disorders.
- Describe appropriate pharmacologic and non-pharmacologic therapies.
- Discuss rationale, reasonable and practical solution to drug related problems.
- Describe the desired outcomes of pharmacotherapy.
- Provide a plan for monitoring drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of Hematology/Oncology disorders.	Lecture	Short notes, MCQs, Cases
1.2	Illustrate the metabolism and structure activity relationships of drugs used in the management of Hematology/Oncology disorders.	Lecture	Short notes, MCQs, Cases
1.3	Describe the drug delivery and dosage formulations of drugs used in the management of Hematology/Oncology disorders.	Lecture	Short notes, MCQs, Cases
1.4	Explain the pharmacology of drugs used in the management of Hematology/Oncology disorders.	Lecture	Short notes, MCQs, Cases
1.5	Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and the prevention and treatment.	Lectures, Team Based Learnings (TBL)	Short notes, MCQs, Cases
2.0	**Skills**		
2.1	Identify and prioritize therapeutic alternatives to individualize patient specific regimens.	Lecture	Short notes, MCQs, Cases
2.2	Identify the drug-related problems associated with management of patient with Hematology/Oncology disorders.	Lectures, TBL	Short notes, MCQs, Cases
2.3	Monitor therapeutic outcomes and adverse effects of drug therapy used in management of patient with Hematology/Oncology disorders.	Lectures, TBL	Short notes, MCQs, Cases
2.4	Design appropriate care plan for management of patient with Hematology/Oncology disorders.	Lectures, TBL	Short notes, MCQs, Cases
3.0	**Values**		
3.1	Demonstrate ability to work in group.	TBL	Short notes, MCQs, Cases
3.2	Demonstrate ability for self-learning.	TBL	Short notes, MCQs, Cases

4. Course Content

No	List of Topics	Contact Hours
	Note: Covering of topics according to departments: • Pathophysiology: ▪ Pathogenesis, ▪ Risk factors, and Epidemiology ▪ Complications, and ▪ Clinical presentation of the disease. • Medicinal Chemistry: ▪ Illustrate the activity -structure relationships and (efficacy, onset of action, and duration as related to the drug chemical structure) ▪ Illustrate the Elimination-structure relationships of drugs used in the management of the disease. (metabolism, excretion, and distribution as related to the drug chemical structure) • Pharmaceutics: ▪ Describe the drug delivery systems of drugs used in the management of the disease and ▪ Describe the dosage formulations of drugs used in the management of the disease. ▪ Describe the drug delivery systems of drugs as related to absorption of drugs • Pharmacology: Explain the pharmacology of drugs used in the management of the course disease includes: ▪ Mechanisms of action, Onset and duration of action, ▪ Pharmacokinetics (Distribution, Metabolism, and Excretion) ▪ Indications, ▪ Side effects, and ▪ Contraindications. • Pharmacy Practice: ▪ Role of pharmacists according to legal, ethical and professional standards in promoting health, prevention, treatment, and Patient education. ▪ Identify and prioritize therapeutic alternatives to individualize patient specific regimens (care-plan). ▪ Identify the drug-related problems associated with the disease. ▪ Monitor therapeutic outcomes (efficacy and safety). ▪ Demonstrate ability for self-learning and ability to work in groups.	

No	List of Topics	Contact Hours	
1	Anemia	Pathophysiology	3
		Medic. Chemistry	2
		Pharmaceutics	2
		Pharmacology	3
		Pharmacy Practice	5
2	Coagulation Disorders	Pathophysiology	3
		Medic. Chemistry	2
		Pharmaceutics	2
		Pharmacology	3
		Pharmacy Practice	5
3	Drug-Induced Hematologic Disorders	Pathophysiology	4
		Medic. Chemistry	0
		Pharmaceutics	0
		Pharmacology	0
		Pharmacy Practice	6
4	Introduction to Oncology + Leukemia/Lymphoma	Pathophysiology	3
		Medic. Chemistry	2
		Pharmaceutics	2
		Pharmacology	3
		Pharmacy Practice	5
	Solid-Organ Tumors (Lung, Breast, and Colorectal	Pathophysiology	3
		Medic. Chemistry	2
		Pharmaceutics	2
		Pharmacology	3
		Pharmacy Practice	5
Total		**70**	

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	60
2	**Laboratory/Studio**	--
3	**Tutorial**	10
4	**Others (specify):**	--
	Total	70

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Individual reading assessment test**	2-10	15 %
2	**Group reading assessment test**	2-10	15%
3	**Midterm exam**	7-9	20 %
4	**Final exam**	11-13	50 %

7. Learning Resources

1	**Required Textbooks**	▯ Pathophysiology and pharmacotherapy: ▯ McCorry LK, Zdanowicz MM, Gonnella CY. Essentials of Human Physiology and Pathophysiology for Pharmacy and Allied Health. Routledge; 2018 Dec 21. ▯ Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey. Pharmacotherapy: A Pathophysiologic Approach. 11 th edition (2017). McGraw-Hill/Appleton & Lange. ▯ Chisholm-Burns, Marie A., Barbara G. Wells, and Terry L. Schwinghammer. Pharmacotherapy principles and practice. McGraw-Hill, 2019. ▯ Schwinghammer, T. L., In Koehler, J. M., In Borchert, J. S., & In Slain, D. (2017). Pharmacotherapy casebook: A patient-focused approach. 10 the edition. ▯ Koda-Kimble and Young's Applied Therapeutics: The Clinical Use of Drugs 10th Edition, 2013, by LIPPINCOTT WILLIAMS & WILKINS, a WOLTERS KLUWER ▯ Pharmacology: ▯ Bertram G. Katzung, Susan B. Masters and Anthony J. Trevor (eds). Basic and Clinical Pharmacology, 12th Edition, 2012, McGraw Hill Lang, New York. ISBN-13: 978-0071764018 ISBN-10: 0071764011 ▯ Lippincott Illustrated Reviews: Pharmacology (Lippincott Illustrated Reviews Series). 6th Ed. 2014. Williams and Wilkins Publisher Co., N.Y. ISBN-13: 978-1451191776 ISBN-10: 1451191774 ▯ Medicinal chemistry: ▯ Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry ▯ Foy's Principle of medicinal chemistry, David A. Williams, Lippincott: New York

	Required Textbooks	▯ Pharmaceutics: ▯ Required Textbooks: Ansel's Pharmaceutical dosage forms and drug delivery systems: 2010 – edition 10 – Loyd Allen, Nicholas Popovich and Howard Ansel
2	**Essential References Materials**	
3	**Electronic Materials**	▯ Saudi digital library ▯ https://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl ▯ Access pharmacy ▯ https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/
4	**Other Learning Materials**	N/A

Graduation Project

Course Name Graduation Project	إسم المقرر: مشروع التخرج
Course Code & No.: PHP 434	رقم المقرر ورمزه: مصد 434
Credits: 2(0+2+0)	عدد الساعات: المعتمدة: 2(0+2+0)
Prerequisite: PHP 231, PHP112	المتطلب: السابق: مصد 231, مصد 112
Level:7	المستوى: 7
Course type: Required	نوع الدورة: متطلب

1. Course Description

Topics will include research design, data collection, analysis, interpretation and formulation of research results and describing their process in oral session presentation

2. Course Main Objectives

The course aims to introduce students to:

- Provide an opportunity for students to work on projects of variable scopes.
- Introduce students to the method used to conduct research.
- To provide students with the opportunity to give formal presentation of the project.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Demonstrate knowledge of writing research proposals and report	Lectures	Evaluation of Proposal & Report writing
2.0	**Skills**		
2.1	Conduct literature review in the project domain	Project	Evaluation of Proposal & Report writing
2.2	Collect, analyze and interpret scientific data in research project	Project	Evaluation of Proposal & Report writing

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.3	Effectively communicate through written reports and oral presentations	Project	Evaluation of Project presentation
2.4	Effectively perform psychomotor skills in the laboratory and technical tasks during the execution of their research projects.	Lab	Continuous evaluation in the laboratory throughout the project perio
3.0	**Values**		
3.1	Display integrity, trustworthiness, confidence and ethical behavior throughout the project	Lectures, Project, Lab training or clinical project execution	Observation (Continuous evaluation), Plagiarism detection, presentation

4. Course Content

No	List of Topics	Contact Hours
1	Introduction	3
2	Proposal writing Lecture & Selection of projects	3
3	Literature collection & Writing Research Proposal	9
4	Laboratory experiments, Data collection and data analysis	21
5	5 Final report writing and presentation	9
Total		**48**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours	Percentage of Total Assessment Score
1	**Lecture**	1	24%
2	**Laboratory/Studio**	10	16 %
3	**Tutorial**	NA	40%
4	**Others (specify):**	50	20%
	Total	61	

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Proposal**	6 th week, 1 st Sem	24%
2	**Student Engagement**	1 st week, 1 st Sem-10 th week, 2nd Sem	16 %
3	**Final report**	7 th week, 1 st Sem- 9 th week, 2 rd Sem	40%
5	**Independent evaluation (presentation)**	11th week, 2nd Sem	20%

7. Learning Resources

1	**Required Textbooks**	1. List Required TextbooksBrian L. Strom, Stephen E. Kimmel, Sean Hennessy (2019). Pharmacoepidemiology 6th Edition. Wiley-Blackwell (ISBN-13: 978-0470654750 ISBN-10: 0470654759)Brian L. Strom and Stephen E. Kimmel (2013). Textbook of Pharmacoepidemiology. 2nd Edition. Wiley-Blackwell (ISBN-13: 978-1118344866 ISBN-10: 1118344863)Ravi Humbarwadi. (2014). Pharmacoepidemiology: Post Marketing Pharmacoepidemiology Paperback – CreateSpace Independent Publishing Platform (ISBN-10: 1500556122 ISBN-13: 978-1500556129)Yi Yang, Donna West-Strum. (2010). Understanding Pharmacoepidemiology. LANGE Clinical Science 1st Edition. McGraw-Hill (ISBN-13: 978-0071635004 ISBN-10: 0071635009)
2	**Essential References Materials**	
3	**Electronic Materials**	Access PharmacyPharmacy LibraryMartindale: Complete Drug ReferenceLexicomp Online with AHFSFacts & Comparison BundleProQuest Database • http://www.library.qu.edu.sa/Pages/default.aspx • http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about • http://accesspharmacy.mhmedical.com/ss/About.aspx • http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx • http://search.proquest.com/ These databases consist of Pharmacy textbooks, multimedia library, Drug therapy cases, Extensive self-assessment, topics in Evidence-Based Pharmacy Practice, Integrated drug database, NAPLEX® review, journal and news, references to primary literature and additional instructor resources.
4	**Other Learning Materials**	Other learning material such as computer-based programs/CD, professional standards or regulations and software.NA

Pharmacoepidemiology & Medication Safety

& Course Name: Pharmacoepidemiology Medication Safety	إسم المقرر: الوبائيات الدوائية وسلامة الأدوية
Course Code & No.: PHP 491	رقم المقرر ورمزه : مصد 491
Credits: 1(1+0+0)	عدد الساعات: المعتمدة: 1(1+0+0)
Prerequisite: PHP 231, PHP315	المتطلب: السابق : مصد 231, مصد 315
Level:7	المستوى:7
Course type: Required	نوع الدورة: متطلب

1. Course Description

This course is designed to provide a framework for the understanding and application of the concepts and techniques of pharmacoeconomics and pharmacoepidemology. The course also emphasizes the importance of utilizing Pharmacoeconomic and Pharmacoepidemiology results when evaluating drug safety. It also enables students to explore and assess vital topics and trends regarding spontaneous reporting systems, adverse drug reactions, and post marketing surveillance (PMS).

2. Course Main Objectives

The course aims to introduce students to:

- Basic concepts and theoretical aspects in pharmacoepidemiology
- Roles and responsibilities of pharmacoepidemiologists
- Basic requirements and steps needed to conduct a pharmacoepidemiology-related procedures and actions
- Common study designs used for pharmacoepidemiologic evaluations
- Strength and limitations of the study designs used in pharmacoepidemiology
- Rules and formulae used for pharmacoepidemiological calculations
- Application of concepts and theories of pharmacoepidemiology on some practical scenarios and cases provided as examples

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Explain the role of outcome research in pharmacoepidemiology	Lectures tutorials	MCQs, Short notes, Assignment (report)
1.2	Describe different types of outcome research	Lectures tutorials	MCQs, Short notes, Assignment (report)

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	Describe the methods, steps, and techniques used to conduct pharmacoepidemology evaluations	Lectures tutorials	MCQs, Short notes, Assignment (report)
1.4	Describe the concept of pharmacoepidemology and its application in pharmacy practice	Lectures tutorials	MCQs, Short notes, Assignment (report)
1.5	Describe the concept of postmarketing surveillance, their limitations and ethical considerations	Lectures tutorials	MCQs, Short notes, Assignment (report)
2.0	**Skills**		
2.1	Apply pharmacoepidemiological concepts to clinical practice	Lectures tutorials	MCQs, Short notes, Case studies & Assignment (report)
2.2	Differentiate various types of pharmacoepidemiological methods	Lectures tutorials	MCQs, Short notes, Case studies & Assignment (report)
2.3	Apply the concepts of pharmacoepidemology in monitoring, evaluation, and approval of new drugs	Lectures tutorials	MCQs, Short notes, Case studies & Assignment (report)
	Communicate the risk associated with adverse drug reactions to drug regulatory authority	Lectures tutorials	(MCQs, Case studies) & Assignment (report)
	Conduct pharmacoepidemiological research and analyses	Lectures tutorials	(MCQs, Case studies) & Assignment (report)
3.0	**Values**		
3.1	None		

4. Course Content

No	List of Topics	Contact Hours
1	Pharmacoepidemology: Definitions and historical background	1.5
2	Basic concepts and statistics of drug safety and risk: (quality defects, medication errors, adverse drug reactions)	1.5
3	Sources of data and information for pharmacoepidemology and overview of epidemiologic research	1.5
4	Measures of Disease Frequency/Outcomes (rates, proportions, ratios, incidence, prevalence)	1.5

No	List of Topics	Contact Hours
5	Claculating and interpreting epidemiologic measures of risks (Relative risk, Odds ratio, attritutable risk)	1.5
6	Claculating and interpreting epidemiologic measures of risks (Relative risk, Odds ratio, attritutable risk)	1.5
7	Regulatory decision making and Regulatory agencies and Medication safety (midication errors and adverse drug reaction monitoring and reporting)	1.5
8	Pharmacovigilance and The spontaneous reporting systems/ Standards of postmarketing surveillance	1.5
9	Systematic Review: application on pharmacoepidemology literature and Meta-analysis : application on pharmacoepidemology literature	1.5
10	Drug utilization review and Risk analysis and Risk Management	1.5
	Total	**15**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	15
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others (specify):**	
	Total	

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**1st Assignment (Written report)**	5-8	5%
2	**Written exams (1st Mid-term)**	5-6	30 %
3	**2nd Assignment (Oral Presentation)**	8-10	5%
5	**Written exams (Final exam)**	10-12	60%

7. Learning Resources

1	Required Textbooks	1. List Required TextbooksBrian L. Strom, Stephen E. Kimmel, Sean Hennessy (2019). Pharmacoepidemiology 6th Edition. Wiley-Blackwell (ISBN-13: 978-0470654750 ISBN-10: 0470654759)Brian L. Strom and Stephen E. Kimmel (2013). Textbook of Pharmacoepidemiology. 2nd Edition. Wiley-Blackwell (ISBN-13: 978-1118344866 ISBN-10: 1118344863)Ravi Humbarwadi. (2014). Pharmacoepidemiology: Post Marketing Pharmacoepidemiology Paperback – CreateSpace Independent Publishing Platform (ISBN-10: 1500556122 ISBN-13: 978-1500556129)Yi Yang, Donna West-Strum. (2010). Understanding Pharmacoepidemiology. LANGE Clinical Science 1st Edition. McGraw-Hill (ISBN-13: 978-0071635004 ISBN-10: 0071635009)
2	Essential References Materials	
3	Electronic Materials	Access Pharmacy Pharmacy Library Martindale: Complete Drug Reference Lexicomp Online with AHFS Facts & Comparison Bundle ProQuest Database http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspxhttp://search.proquest.com/ These databases consist of Pharmacy textbooks, multimedia library, Drug therapy cases, Extensive self-assessment, topics in Evidence-Based Pharmacy Practice, Integrated drug database, NAPLEX® review, journal and news, references to primary literature and additional instructor resources.
4	Other Learning Materials	Other learning material such as computer-based programs/CD, professional standards or regulations and software.NA

Pharmacoeconomics

Course Name: Pharmacoeconomics	إسم المقرر: إقتصاديات الدواء
Course Code & No.: PHP492	رقم المقرر ورمزه: مصد 492
Credits: 1(1+0+0)	عدد الساعات: المعتمدة: 1(1+0+0)
Prerequisite: MATH 135, PHP 231	المتطلب: السابق:ريض 135 ، مصد 231
Level: 7	المستوى: 7
Course type: Required	نوع الدورة: متطلب

1. Course Description

Pharmacoeconomics introduces the student to study to determine whether the expense incurred by using a new medication is justified in comparison with the cost of existing medication using different pharmacoeconomics evaluations to allocate the available resources

2. Course Main Objectives

The course aims to introduce students to:

- Basic concepts and theoretical aspects in pharmacoeconomics
- Roles and responsibilities of pharmacoeconomists
- Basic requirements and steps needed to conduct a pharmacoeconomic -related procedures and actions
- Common study designs used for pharmacoeconomic evaluations
- Strength and limitations of the study designs used in pharmacoeconomics
- Rules and formulae used for pharmacoeconomic calculations
- Application of concepts and theories of pharmacoeconomics on some practical scenarios and cases provided as examples

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Explain the role of pharmacoeconomics research	Lectures	MCQs, Short notes, Assignment (report)
1.2	Describe different types of economic and evaluations	Lectures	MCQs, Short notes, Assignment (report)
1.3	Describe the methods, steps, and techniques used to conduct Pharmacoeconomics evaluations	Lectures	MCQs, Short notes, Assignment (report)

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.4	Describe the concept of Pharmacoeconomics and its application in pharmacy practice	Lectures	MCQs, Short notes, Assignment (report)
2.0	**Skills**		
2.1	Evaluate published pharmacoeconomic studies.	Lectures	MCQs, Short notes, Case studies & Assignment (report)
2.2	Apply Pharmacoeconomics concepts to clinical practice	Lectures	MCQs, Short notes, Case studies & Assignment (report)
2.3	Differentiate various types of Pharmacoeconomics methods	Lectures	MCQs, Short notes, Case studies & Assignment (report)
2.4	Apply the concepts of Pharmacoeconomics in monitoring and evaluation	Lectures	MCQs, Short notes, Case studies & Assignment (report)
2.5	Use Calculations and interpretations of results in practical scenarios	Lectures	(MCQs, Case studies) & Assignment (report)
2.6	Conduct Pharmacoeconomics research analyses	Lectures	(MCQs, Case studies) & Assignment (report)
3.0	**Values**		
3.1	None		

4. Course Content

No	List of Topics	Contact Hours
1	• Introduction to pharmacoeconomics and Basic economic principles	1.5
2	• Costing versus outcome and Prespectives of pharmacoeconomic evaluation	1.5
3	• Cost minimization analysis and Cost effectiveness analysis	1.5
4	• Calculation and interpretatin of incremental cost effectiveness ratio	1.5
5	• Cost utility analysis Cost benefit analysis	1.5
6	• Budget impact analysis	1.5
7	• Discounting and modeling and Sensitivity tests and decision analysis	1.5
8	• Appraisal of economic evaluation studies	1.5

No	List of Topics	Contact Hours
9	Application on practical scenarios and studies (calculation, interpretation and critique)	1.5
10	Application on practical scenarios and studies (calculation, interpretation and critique)	1.5
	Total	**15**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	15
2	**Laboratory/Studio**	0
3	**Tutorial**	0
4	**Others (specify):**	0
	Total	15

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Written exams (1st Mid-term)**	5	30%
2	**Assignment**	6-10	10 %
3	**Written exams (Final exam)**	10-13	60%

7. Learning Resources

1	**Required Textbooks**	Karen Rascati Pharm D PhD (2021) Essentials of Pharmacoeconomics. third Edition. Lippincott Williams & Wilkins (ISBN-13: 978-1451175936 ISBN-10: 1451175930)Drummond, M. F., Sculpher, M. J., Claxton, K., Stoddart, G. L., & Torrance, G. W. (2015). Methods for the economic evaluation of health care programmes. Oxford university press.Grauer, D. W. (Ed.). (2003). Pharmacoeconomics & Outcomes. Amer College of Clinical Pharmacy.

2	Essential References Materials	
3	Electronic Materials	Access Pharmacy Pharmacy Library Martindale: Complete Drug Reference Lexicomp Online with AHFS Facts & Comparison Bundle ProQuest Database http://www.library.qu.edu.sa/Pages/default.aspx+ http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx http://search.proquest.com/ These databases consist of Pharmacy textbooks, multimedia library, Drug therapy cases, Extensive self-assessment, topics in Evidence-Based Pharmacy Practice, Integrated drug database, NAPLEX® review, journal and news, references to primary literature and additional instructor resources.
4	Other Learning Materials	Other learning material such as computer-based programs/CD, professional standards or regulations and software.Treeage software

Level (8)

No	Course Title	Code/No.
1	Pharmacy Law	PHP 417
2	Integrated Pharmacotherapy: Dermatology/EENT	PHP 467
3	Integrated Pharmacotherapy: GIT/Nutrition	PHP 468
4	Integrated Pharmacotherapy: Critical Care/ Clinical Toxicology	PHP 424
5	Integrated Pharmacotherapy: musculoskeletal	PHP 469
6	Evidence-based Practice (3)	PHP 433
7	Elective Course	

Pharmacy Law

Course Name: Pharmacy Law	قانون الصيدلة	إسم المقرر:
Course Code & No.: PHP 417	PHP 417	رقم المقرر ورمزه:
Credits: 1(1+0+0)	(0+0+1)1	عدد الساعات: المعتمدة:
Prerequisite: PHP 112	PHP 112	المتطلب: السابق:
Level: 8	8	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The course deals with the materials of the pharmacy law, which deals with the regulations of pharmacy practice and trading in medicinal and pharmaceutical products issued by the Council of Ministers letter number 335 and dated 4/11/1426 H and Its various explanations.

The course is one hour, delivered by lecture through which the followings will be discussed: pharmacy practice including registration of pharmacists and their assistants, pharmacies, wholesale drug distribution warehouses, pharmaceutical companies and industries, medicines registration, pharmaceutical companies' registration and their scientific offices, transitional provisional rules, penalties, and regulations of poisons, narcotics, and psychiatric medications under control.

2. Course Main Objectives

- Study the Saudi Arabian laws and regulations that regulate the profession of pharmacy and pharmaceutical preparations.
- Describe the rights and responsibilities of health professionals in the Saudi health system
- Recognize various requirements and procedures of pharmacist registration and that required for registering new drugs and companies.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define Saudi regulations governing pharmacy profession as well as the profession of other health care providers.	Lecture and Class Discussion	Short notes/ MCQs
1.2	Describe various SFDA requirements registration of company and its new products	Lecture and Class Discussion	Short notes/ MCQs
1.3	Define Saudi regulations law of narcotics and psychotropic's substance	Lecture and Class Discussion	Short notes/ MCQs

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Explain SFDA regulation process of pricing rule of drug	Lecture and Class Discussion	Short notes/ MCQs
2.2	Define Saudi regulations governing pharmacy profession as well as the profession of other health care providers	Lecture and Class Discussion	Short notes/ MCQs
2.3	Define Saudi regulations governing pharmacy profession as well as the profession of other health care providers	Lecture and Class Discussion	Short notes/ MCQs
2.4	Explain SFDA regulation process of pricing rule of drug	Lecture and Class Discussion	Short notes/ MCQs
3.0	**Values**		

4. Course Content

No	List of Topics	Contact Hours
1	Introduction	1
2	Role of Ministry of health in regulating Pharmacy at Saudi Arabia	1
3	3 Law of Practicing Healthcare Professions Conduct in KSA (Licensing and Duties Of Healthcare Professional)	1
4	4 Law of Practicing Healthcare Professions Conduct in KSA (Professional liability and investigation and trial)	1
5	Role of SFDA in regulate Pharmacy at Saudi Arabia	1
6	SFDA Regulations & Guidelines (website)	1
7	SFDA Electronic services E.g.: Saudi Vigilance system, Saudi clinical trial registry	1
8	Role of GCC in regulating Pharmacy at Saudi Arabia	1
9	Policy of pharmacy in main Saudi hospitals	1
10	Regulation of drug companies	3
11	Regulation and Policy of community pharmacy	1
12	Regulation and Policy of Health insurance companies	1
13	Revision and Discussion	1
Total		**15**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	15
2	Laboratory/Studio	
3	Tutorial	
4	Others (learning hours)	30
	Total	45

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm 1	7	20 %
2	Midterm 2	13	20 %
3	Assignment	15	10 %
5	Final exam	16	50%

7. Learning Resources

1	Required Textbooks	• Pharmacy Practice Law in the KSA-supplemented, Ed., the Saudi Ministry of Health. • Law of Practicing Healthcare Professions Conduct in KSA, the Ministry of Health • Law of pharmaceutical establishment and preparation, The Ministry of Health Drug pricing role in KSA, SFDA • The requirements and conditions for companies and it products registration , SFDA Law & regulation of Narcotic and psychotropic substance, The Ministry of Health
2	Essential References Materials	
3	Electronic Materials	http://old.sfda.gov.sa/AR/DRUG/DRUG_REG/Pages/drug_reg.aspxh http://old.sfda.gov.sa/AR/DRUG/DRUG_REG/Pages/drug_reg.aspx
4	Other Learning Materials	None

Integrated Pharmacotherapy: Dermatology /ENT

Course Name: Integrated :Pharmacotherapy Dermatology /ENT	العلاج الدوائي المتكامل/ الامراض الجلدية	إسم المقرر:
Course Code & No.: PHP 467	PHP 467	رقم المقرر ورمزه:
Credits: 3(2+0+1)	(2+0+1)3	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 8	8	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of disease associated with dermatology/ENT diseases, with concepts of drug action and therapy. The pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis will be placed on drug selection, dosing regimen design and therapeutic drug monitoring to assess the attainment of therapeutic efficacy and avoidance of adverse reactions.

2. Course Main Objectives

Upon successful completion of this course, the students will be able to:

1. Describe the pathophysiological processes of dermatology/ENT diseases.
2. Explain the pharmacology of drugs used in the management of dermatology/ENT diseases.
3. Illustrate the structural activity relationships of drugs used in the management of dermatology/ENT diseases.
4. Describe the dosage formulations of drugs used in the management of dermatology/ENT diseases.
5. Provide therapeutic knowledge necessary to manage patients with dermatology/ENT diseases.
6. Describe appropriate pharmacologic and non-pharmacologic therapies.
7. Discuss rationale, reasonable and practical solution to drug related problems.
8. Describe the desired outcomes of pharmacotherapy.
9. Provide a plan for monitoring drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of Dermatology/ENT disorders.	Lecture	Short notes/ MCQs/ Cases
1.2	Illustrate the metabolism and structure activity relationships of drugs used in the management of Dermatology/ENT disorders.	Lecture	Short notes/ MCQs/ Cases
1.3	Describe the drug delivery and dosage formulations of drugs used in the management of Dermatology/ENT disorders.	Lecture	Short notes/ MCQs/ Cases
1.4	Explain the pharmacology of drugs used in the managment of Dermatology/ENT disorders.	Lecture	Short notes/ MCQs/ Cases
1.5	Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and the prevention and treatment.	Lecture	Short notes/ MCQs/ Cases
2.0	**Skills**		
2.1	Identify and prioritize therapeutic alternatives to individualize patient specific regimens.	Lecture	Short notes/ MCQs/ Cases
2.2	Identify the drug-related problems associated with management of patient with Dermatology/ENT disorders.	Lectures, TBL	Short notes/ MCQs/ Cases
2.3	Monitor therapeutic outcomes and adverse effects of drug therapy used in management of patient with Dermatology/ENT disorders.	Lectures, TBL	Short notes/ MCQs/ Cases
2.4	Design appropriate care plan for management of patient with Dermatology/ENT disorders.	Lectures, TBL	Short notes/ MCQs/ Cases

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	**Values**		
3.1	Demonstrate ability to work in group.	TBL	Team Based Learning (GRAT) MCQs
3.2	Demonstrate ability for self-learning.	TBL	Team Based Learning (IRAT), MCQs

4. Course Content

No	List of Topics	Contact Hours
1	Drug-induced dermatologic disorders	2.72
2	Dermatologic Disorders (Skin disorders)	2.72
3	Burn injuries & Wounds	2.72
4	Cough and sore throat	2.72
5	Cerumen impaction and otitis externa	2.72
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	30
4	**Others (learning hours)**	75
	Total	135

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**TBL1**	5	10 %
2	**TBL2**	6	10 %
3	**TBL3**	8	10 %
4	**MIDTERM**	10	20%
5	**Final exam**	12	50%

7. Learning Resources

1	**Required Textbooks**	Pathophysiology and pharmacotherapy: • McCorry LK, Zdanowicz MM, Gonnella CY. Essentials of Human Physiology and Pathophysiology for Pharmacy and Allied Health. Routledge; 2018 Dec 21. • Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey. Pharmacotherapy: A Pathophysiologic Approach. 11 th edition (2017). McGraw‐Hill/Appleton & Lange. • Chisholm-Burns, Marie A., Barbara G. Wells, and Terry L. Schwinghammer. Pharmacotherapy principles and practice. McGraw-Hill, 2019.· Schwinghammer, T. L., In Koehler, J. M., In Borchert, J. S., & In Slain, D. (2017). Pharmacotherapy casebook: A patient-focused approach. 10 the edition. • Koda-Kimble and Young's Applied Therapeutics: The Clinical Use of Drugs 10th Edition, 2013, by LIPPINCOTT WILLIAMS & WILKINS, a WOLTERS KLUWERPharmacology: • Bertram G. Katzung, Susan B. Masters and Anthony J. Trevor (eds). Basic and Clinical Pharmacology, 12th Edition, 2012, McGraw Hill Lang, New York. ISBN-13: 978-0071764018 ISBN-10: 0071764011 • Lippincott Illustrated Reviews: Pharmacology (Lippincott Illustrated Reviews Series). 6th Ed. 2014. Williams and Wilkins Publisher Co., N.Y. ISBN-13: 978-1451191776 ISBN-10: 1451191774 Medicinal chemistry: • Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry • Foy's Principle of medicinal chemistry, David A. Williams, Lippincott: New York Pharmaceutics: Required Textbooks: Ansel's Pharmaceutical dosage forms and drug delivery systems: 2010 – edition 10 – Loyd Allen, Nicholas Popovich and Howard Ansel
2	**Essential References Materials**	
3	**Electronic Materials**	• Saudi digital library • https://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl · Access pharmacy https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/
4	**Other Learning Materials**	None

Gastrointestinal Tract / Nutrition Integrated Pharmacotherapy

Course Name: GIT and Nutrition Integrated Pharmacotherapy	الجهاز الهضمي / التغذية العلاج الدوائي المتكامل	إسم المقرر:
Course Code & No.: PHP 468	PHP 468	رقم المقرر ورمزه:
Credits: 4(3+0+1)	(3+0+1)4	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 8	8	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of gastrointestinal diseases and nutrition related problems with concepts of pharmacological drug action and pharmacotherapeutic approaches. The state-of-the-art pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, medicinal chemistry. Emphasis will be placed on selecting and designing patient specific evidence based pharmacotherapeutic regimen with monitoring of therapy, patient education and counselling to achieve therapeutic efficacy and quality use of medicine and to avoid any untoward or adverse medical event.

2. Course Main Objectives

The course aims to introduce students to:

- Describe the pathophysiological processes of gastrointestinal diseases and nutritional deficiencies.
- Explain the pharmacology of drugs employed in the treatment of diseases affecting the gastrointestinal system
- Illustrate the structural features and activity relationships of drugs employed in the treatment of diseases affecting the gastrointestinal system
- Describe the pharmacokinetics of drugs employed in the treatment of diseases affecting the gastrointestinal system
- Describe the evidence-based treatment guidelines for gastrointestinal diseases
- Define principles of adult and pediatric enteral & parenteral nutrition
- Calculate enteral and parenteral doses of nutrition.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Describe the pathophysiological processes of gastrointestinal diseases and nutritional deficiencies.	Lectures	MCQs, short notes, patient cases
1.2	Explain the pharmacology of drugs employed in the treatment of diseases affecting the digestive system	Lectures	MCQs, short notes, patient cases
1.3	Illustrate the structural features and activity relationships of drugs employed in the treatment of diseases affecting the digestive system	Lectures	MCQs
1.4	Describe the pharmacokinetics of drugs employed in the treatment of diseases affecting the gastrointestinal system	Lectures	MCQs, short notes
1.5	Describe therapeutic goals, drug and non-drug therapies, risk factors and therapeutic goals in patient cases	Lectures, Team-based learning (TBL)	MCQs, short notes, patient cases, TBL
1.6	Describe adult and pediatric enteral and parenteral nutrition therapy	Lectures	Mid-term exam, final exam
1.7	Describe principles of compounding sterile drug preparations and aseptic technique	Lectures	MCQs, short notes
2.0	Skills		
2.1	Identify drug related problems in patient cases by applying evidence based pharmacotherapy guidelines	Lectures, TBL	MCQs, short notes, patient cases, TBL
2.2	Prepare a pharmacotherapeutic care plan for the patient with patient education, monitoring and follow up	Lectures, TBL	MCQs, short notes, patient cases, TBL
2.3	Calculate the nutritional requirement of patients based on their nutritional needs	Lectures	Short notes, patient cases

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.0	Values		
3.1	Evaluate own learning and performance, make decision regarding self-development and practice reflective and independent thinking to effectively manage and respond to routine or unanticipated circumstances.	TBL	TBL
3.2	Demonstrate empathy, professional attitude, ethical behavior, social and cultural awareness and proper judgment in various settings.	Lectures	TBL, OSCE

4. Course Content

No	List of Topics	Contact Hours
1	· Basics of adult parenteral and enteral nutrition	12
2	· Basics of paediatric parenteral and enteral nutrition	12
3	Upper Gastrointestinal Disorders: (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology and pharmacy practice) · Gastroesophageal reflux (GERD) · Peptic ulcer and H.pylori · Upper GI bleeding	12
4	Lower Gastrointestinal Disorders: (Pathophysiology, pharmaceutics, medicinal chemistry, pharmacology, and pharmacy practice) · Ulcerative colitis · Crohn's disease · Coeliac disease	12
5	Liver diseases: (Pathophysiology, medicinal chemistry, pharmacology, and pharmacy practice) · Viral Hepatitis (B and C) · Liver cirrhosis · Portal hypertension	12
	Total* 1 contact hour = 65 minutes	**60**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	45
2	Laboratory/Studio	
3	Tutorial	15
4	Others (specify)	
	Total	60

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Individual reading assessment test	9	7.5%
2	Group reading assessment test	9	7.5%
3	Midterm exam	5-7	35%
4	Final exam	12	50%

7. Learning Resources

1	Required Textbooks	Basic & Clinical Pharmacology, Editors: Bertram G. Katzung, Susan B. Masters, Anthony J. Trevor, Publisher: McGraw Hill, Edition: 12th edition, Pharmacology Lippincott's Illustrated Reviews Editors: R A Harvey, MA Clark, R Finkel, J A Rey, K Whalen, Publisher: Wolters Kluwer/Lippincott Williams & Wilkins Edition: 5th edition Applied Biopharmaceutics and Pharmacokinetics, Editor: Leon Shargel, Susana WU-Pong and Andrew B.C. YU, Publisher: Mac Grew Hill, International Edition, 6th edition An Introduction to Medicinal Chemistry: Editors: Graham L. Patrick, Publisher: Oxford University Press, Edition: 5th edition Pathological basis of disease: Editors: kumar, Abbas, Aster, Publisher: Elsevier saunders, Edition: 9th Applied Therapeutics. The Clinical Use of Drugs. 11th edition Mary Anne Koda-Kimble1 Lloyd Yee Young1 Wayne A. Kradjan1 B. Joseph Guglielmo. (2018). Lippincott Williams & Wilkins Publishers. Pharmacotherapy: A Pathophysiologic Approach. 11th edition (2017) Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey.

2	Essential References Materials	▪ None
3	Electronic Materials	http://www.library.qu.edu.sa/Pages/default.aspx http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx http://search.proquest.com/
4	Other Learning Materials	None

Integrated Pharmacotherapy: Critical Care / Clinical Toxicology

Course Name: Integrated Pharmacotherapy: Critical Care / Clinical Toxicology	العلاج الدوائي المتكامل: الرعاية الحرجة /علم السموم السريري	إسم المقرر:
Course Code & No.: PHP 424	PHP 424	رقم المقرر ورمزه:
Credits: 2(1+0+1)	(1+0+1)2	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 8	8	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

This course is designed to provide pharmacy students with the basic knowledge and skills required to manage critically ill patients. Course content includes the principles of hemodynamic monitoring and the pathophysiology and management of selected diseases affecting major organ systems and requiring intensive care therapy.

2. Course Main Objectives

The course aims to introduce students to:

- To provide students with knowledge about the general treatment principles of poisonings, toxicity and medication overdose.
- To train students on the assessment of clinical data and suggest direct patient care to the critically ill patient who may require specialized pharmacologic or technological interventions to maintain blood pressure, respiration, and other homeostatic functions, in addition to helping manage the patient's primary condition.
- To train students on group working to gain value of team-working 4. To train students on self-learning to prepare them for future challenges

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of acute respiratory distress syndrome, pain, agitation, and delirium	Lectures & TBL	MCQs, short notes,

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Recognize procedures commonly performed in critical care (e.g., bronchoscopy, central line placements, intubation, therapeutic hypothermia, balloon pump, left ventricular assist device, cooling devices and mechanical ventilation)	Lectures & TBL	MCQs, short notes,
1.3	Describe measures used in the management of poisoning, drug induced toxicity and overdose	Lectures & TBL	MCQs, short notes,
2.0	**Skills**		
2.1	Identify the drug-related problems associated with management of a critically ill patient with (Stress ulcer prophylaxis, venous thromboembolism prophylaxis and bowel regimens, Cardiac Arrhythmias, Cardiogenic & Hypovolemic shock, acute respiratory distress syndrome, GI Bleeding, Acute Renal Failure, Shock, TBI, pain, agitation, delirium, poisoning, toxicity, drug overdose)	Lectures, TBL	MCQs, short notes, patient cases
2.2	Design, recommend and monitor therapeutic regimens for a critically ill patient with (Stress ulcer prophylaxis, venous thromboembolism prophylaxis and bowel regimens, Cardiac Arrhythmias, Cardiogenic & Hypovolemic shock, acute respiratory distress syndrome, GI Bleeding, Acute Renal Failure, Shock, TBI, pain, agitation, delirium, poisoning, toxicity, drug overdose)	Lectures, TBL	MCQs, short notes, patient cases
3.0	**Values**		
3.1	Demonstrate ability to work in group	TBL	Survey
3.2	Demonstrate ability for self-learning	TBL	Survey & MCQs

4. Course Content

No	List of Topics	Contact Hours
1	Introduction (Critical Care: General Topics in Critical Care) 3 2 3 3 3 4 3 5 3 6	3
2	Pharmacotherapy of pain, agitation, and delirium in ICU patients	3
3	Preventative and supportive care measures used in the care of critically ill patients (Stress ulcer prophylaxis (SUP), venous thromboembolism (VTE) prophylaxis, and glycemic control in ICU	3
4	Pharmacotherapy considerations in Cardiac Arrhythmias and Advanced Cardiac Life Support (ACLS) in ICU patients	3
5	Acute respiratory distress syndrome & Respiratory failure	3
6	Devices commonly utilized in critical care (e.g., balloon pump, left ventricular assist device [LVAD], cooling devices)	3
7	Procedures commonly performed in critical care (e.g., bronchoscopy, central line placements, intubation, therapeutic hypothermia) and Medications used in Rapid Sequence Intubation Mechanical ventilation principles and monitoring techniques (demonstration of respiratory support methods)	3
8	Upper GI Bleeding and Acute Renal Failure, Fluid, electrolyte and acid/base management in ICU patients	3
9	Pharmacotherapy considerations in the Management of Shock (Cardiogenic & Hypovolemic shock)	3
10	Pharmacotherapy considerations in the Management of Traumatic Brain Injury, Subarachnoid Hemorrhage	3
11	Poisoning and Techniques used to prevent gastrointestinal absorption	3
12	Management of drug induced toxicity and overdosage (1): Salicylates, acetaminophen, toxic alcohols (e.g., methanol, ethylene glycol)	3
13	Management of drug induced toxicity and overdosage (2): Digoxin, calcium channel blockers, beta blockers	3
14	Management of drug induced toxicity and overdosage (3): Opioid, Loperamide, lithium	3
Total		**42**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	42
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify)	
	Total	42

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Individual reading assessment test	2-9-10	15%
2	Group reading assessment test	2-9-10	15%
3	Midterm exam	6-8	20%
4	Final exam	16	50%

7. Learning Resources

1	Required Textbooks	Mary Anne Koda-Kimble, et al. Applied therapeutics: the clinical use of drugs: Lippincott Williams & Wilkins; 11th Edition, 2018. DiPiro, J. T. (2020). Pharmacotherapy: A pathophysiologic approach. New York: McGraw-Hill Medical
2	Essential References Materials	▪ None
3	Electronic Materials	• Saudi digital library https://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl • Access pharmacy https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/
4	Other Learning Materials	None

Integrated Pharmacotherapy: Musculoskeletal

Course Name: Integrated Pharmacotherapy: Musculoskeletal	العلاج الدوائي المتكامل: الهيكلي العضلي	إسم المقرر:
Course Code & No.: PHP469	PHP469	رقم المقرر ورمزه:
Credits: 4 (3+0+1)	(3+0+1) 4	عدد الساعات: المعتمدة:
Prerequisite: PHP 251, PHC PHG 241 ,241	PHP 251, PHC 241, PHG 241	المتطلب: السابق:
Level: 8	8	المستوى:
Course type: Required	مطلوب	نوع الدورة:

1. Course Description

The purpose of this course is to integrate the pathophysiologic abnormalities of disease associated with Musculoskeletal diseases, with concepts of drug action and therapy. The pharmacotherapy will be reviewed with pertinent pathophysiology, pharmacology, pharmaceutics, and medicinal chemistry. Emphasis will be placed on drug selection, dosing regimen design and therapeutic drug monitoring to assess the attainment of therapeutic efficacy and avoidance of adverse reactions.

2. Course Main Objectives

The course aims to introduce students to:

- Describe the pathophysiological processes of musculoskeletal diseases.
- Explain the pharmacology of drugs used in the management of musculoskeletal diseases.
- Illustrate the structural activity relationships of drugs used in the management of musculoskeletal diseases.
- Describe the dosage formulations of drugs used in the management of musculoskeletal diseases.
- Provide therapeutic knowledge necessary to manage patients with musculoskeletal diseases.
- Describe appropriate pharmacologic and non-pharmacologic therapies.
- Discuss rationale, reasonable and practical solution to drug related problems.
- Describe the desired outcomes of pharmacotherapy.
- Provide a plan for monitoring drug efficacy, adverse effects, compliance, and drug interactions for patient drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the pathophysiology, risk factors, complications, and clinical presentation of musculoskeletal diseases.	Lecture	Short notes, MCQs, Cases
1.2	Illustrate the metabolism and structure activity relationships of drugs used in the management of musculoskeletal diseases.	Lecture	Short notes, MCQs, Cases
1.3	Describe the drug delivery and dosage formulations of drugs used in the management of musculoskeletal diseases.	Lecture	Short notes, MCQs, Cases
1.4	Explain the pharmacology of drugs used in the management of musculoskeletal diseases.	Lecture	Short notes, MCQs, Cases
1.5	Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and the prevention and treatment.	Lectures, Team Based Learnings (TBL)	Short notes, MCQs, Cases
2.0	**Skills**		
2.1	Identify and prioritize therapeutic alternatives to individualize patient specific regimens.	Lecture	Short notes, MCQs, Cases
2.2	Identify the drug-related problems associated with management of patient with musculoskeletal diseases.	Lectures, TBL	Short notes, MCQs, Cases
2.3	Monitor therapeutic outcomes and adverse effects of drug therapy used in management of patient with musculoskeletal diseases.	Lectures, TBL	Short notes, MCQs, Cases
2.4	Design appropriate care plan for management of patient with musculoskeletal diseases.	Lectures, TBL	Short notes, MCQs, Cases
3.0	**Values**		
3.1	Demonstrate ability to work in group.	TBL	Short notes, MCQs, Cases
3.2	Demonstrate ability for self-learning.	TBL	Short notes, MCQs, Cases

4. Course Content

No	List of Topics	Contact Hours
	Note: Covering of topics according to departments: • Pathophysiology: ▪ Pathogenesis, ▪ Risk factors, and Epidemiology ▪ Complications, and ▪ Clinical presentation of the disease. • Medicinal Chemistry: ▪ Illustrate the activity -structure relationships and (efficacy, onset of action, and duration as related to the drug chemical structure) ▪ Illustrate the Elimination-structure relationships of drugs used in the management of the disease. (metabolism, excretion, and distribution as related to the drug chemical structure) • Pharmaceutics: ▪ Describe the drug delivery systems of drugs used in the management of the disease and ▪ Describe the dosage formulations of drugs used in the management of the disease. ▪ Describe the drug delivery systems of drugs as related to absorption of drugs • Pharmacology: Explain the pharmacology of drugs used in the management of the course disease includes: ▪ Mechanisms of action, Onset and duration of action, ▪ Pharmacokinetics (Distribution, Metabolism, and Excretion) ▪ Indications, ▪ Side effects, and ▪ Contraindications. • Pharmacy Practice: ▪ Role of pharmacists according to legal, ethical and professional standards in promoting health, prevention, treatment, and Patient education. ▪ Identify and prioritize therapeutic alternatives to individualize patient specific regimens (care-plan). ▪ Identify the drug-related problems associated with the disease. ▪ Monitor therapeutic outcomes (efficacy and safety). ▪ Demonstrate ability for self-learning and ability to work in groups.	

No	List of Topics	Contact Hours	
1	Gout & Hyperuricemia:	Pathophysiology	2
		Medic. Chemistry	1
		Pharmaceutics	1
		Pharmacology	2
		Pharmacy Practice	4
2	Osteoporosis:	Pathophysiology	3
		Medic. Chemistry	2
		Pharmaceutics	2
		Pharmacology	3
		Pharmacy Practice	5
3	Rheumatoid Arthritis:	Pathophysiology	2
		Medic. Chemistry	1
		Pharmaceutics	1
		Pharmacology	2
		Pharmacy Practice	4
4	Osteoarthritis:	Pathophysiology	3
		Medic. Chemistry	2
		Pharmaceutics	2
		Pharmacology	3
		Pharmacy Practice	5
Total		**50**	

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	40
2	**Laboratory/Studio**	--
3	**Tutorial**	10
4	**Others (specify):**	--
	Total	50

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Individual reading assessment test**	2-10	15 %
2	**Group reading assessment test**	2-10	15%
3	**Midterm exam**	7-9	20 %
4	**Final exam**	11-13	50 %

7. Learning Resources

1	**Required Textbooks**	Pathophysiology and pharmacotherapy: McCorry LK, Zdanowicz MM, Gonnella CY. Essentials of Human Physiology and Pathophysiology for Pharmacy and Allied Health. Routledge; 2018 Dec 21. Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey. Pharmacotherapy: A Pathophysiologic Approach. 11 th edition (2017). McGraw-Hill/Appleton & Lange. Chisholm-Burns, Marie A., Barbara G. Wells, and Terry L. Schwinghammer. Pharmacotherapy principles and practice. McGraw-Hill, 2019. Schwinghammer, T. L., In Koehler, J. M., In Borchert, J. S., & In Slain, D. (2017). Pharmacotherapy casebook: A patient-focused approach. 10 the edition. Koda-Kimble and Young's Applied Therapeutics: The Clinical Use of Drugs 10th Edition, 2013, by LIPPINCOTT WILLIAMS & WILKINS, a WOLTERS KLUWER Pharmacology: Bertram G. Katzung, Susan B. Masters and Anthony J. Trevor (eds). Basic and Clinical Pharmacology, 12th Edition, 2012, McGraw Hill Lang, New York. ISBN-13: 978-0071764018 ISBN-10: 0071764011 Lippincott Illustrated Reviews: Pharmacology (Lippincott Illustrated Reviews Series). 6th Ed. 2014. Williams and Wilkins Publisher Co., N.Y. ISBN-13: 978-1451191776 ISBN-10: 1451191774 Medicinal chemistry: Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry Foy's Principle of medicinal chemistry, David A. Williams, Lippincott: New York Pharmaceutics: Required Textbooks: Ansel's Pharmaceutical dosage forms and drug delivery systems: 2010 – edition 10 – Loyd Allen, Nicholas Popovich and Howard Ansel

2	**Essential References Materials**	
3	**Electronic Materials**	▯ Saudi digital library ▯ https://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl ▯ Access pharmacy ▯ https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/
4	**Other Learning Materials**	N/A

Evidence-Based Practice - 3

Course Name: Evidence-Based Practice - 3	الممارسة المبنية على البراهين - 3	إسم المقرر:
Course Code & No.: PHP 433	PHP 433	رقم المقرر ورمزه:
Credits: 2 (1+0+1)	2 (1+0+1)	عدد الساعات:
Prerequisite: PHP 332	PHP 332	المتطلبات المسبقة:
Level: 8	8	المستوى:
Course type: Required	مطلوب	نوع المتطلب:

1. Course Description

This course is designed to provide the students with the necessary skills to fulfill the role of the pharmacist in locating the pertinent drug and disease-state information, interpret and critically evaluate literature sources, and appropriately apply relevant evidence-based medical and drug information on the delivery of pharmaceutical care within the healthcare setting. This course is also designed to provide students with the fundamental skills needed for the provision of drug information in any setting of pharmacy practice.

2. Course Main Objectives

At the completion of the course, the student should be able to:

- Understand the fundamentals, importance and practice of evidence-based practice
- Have the necessary skills to perform critical appraisal and determine the appropriateness of various published literature and apply the principles of literature evaluation to analyze clinical trial results
- Understand the process of developing and evaluating the practice guidelines for the best use of medicine.
- Understand how to use pre-learned knowledge of biostatistics and epidemiology to interpret the results of commonly used statistical tests and evaluate the magnitude of treatment effect
- Demonstrate the ability to judge the reliability and evaluate the validity of various clinical trial and differentiate between internal and external validity of different trials results.
- Determine the level of different evidence and describe the hierarchy of study designs
- Describe the role of clinical practice guidelines in patient care
- Believe in the value of life-long evidence-based learning and staying updated on recent medical news
- Understand how to integrate evidence of drug information, patient-specific factors, and other pertinent information in the delivery of patient care.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize the basic concept and principles of evidence-based pharmacy.	Lecture based	Written exams: (MCQ & short notes)
1.2	Define and understand different types of clinical questions	Lecture based	Written exams: (MCQ & short notes)
1.3	Understanding how to identify and interpret the results of used statistical tests and the magnitude of treatment effect	Lecture based	Written exams: (MCQ & short notes)
2.0	**Skills**		
2.1	Framing and structuring answerable clinical questions FROM	Lecture based	Written exams: (MCQ & short notes)
2.2	Evaluate the literature and critically appraise different types of evidence	LectureTutorial (Journal club)	Written exams: (MCQ & short notes)Journal club
2.3	Determine level of evidence and develop a conclusion and recommendation	LectureTutorial (Journal club)	Written exams: (MCQ & short notes)Journal club
2.4	Explain how to develop clinical practice guidelines and evaluate reports of clinical guidelines	Lecture based	Written exams: (MCQ & short notes)
3.0	**Values**		
3.1	Exhibit effective teamwork and while dealing with the clinical question and identifying and evaluating the evidence	LectureTutorial (Journal club)	Journal club
3.2	Exhibit responsibility while using published medical literature in making recommendations and clinical decision	LectureTutorial (Journal club)	Journal club

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to evidence-based practice:§ Principles and basics of Evidence-Based Medicine§ The steps of practicing evidence-based Medicine	3.5
2	Defining, framing and structure of answerable clinical questions	3.5
3	How to read and understand the evidence (Basics of interpreting commonly used statistical tests) and understanding the magnitude of treatment effect	3.5
4	Literature Evaluation and appraising the evidence: critical appraisal of individual randomized trials	3.5
5	Literature Evaluation and appraising the evidence: systematic reviews and meta-analysis	3.5
6	Literature Evaluation and appraising the evidence: other evidence	3.5
7	Literature Evaluation and appraising the evidence: other evidence	3.5
8	Categorizing quality of evidence and developing a conclusion and recommendation	3.5
9	Clinical guidelines: Reports of clinical practice guidelines and Use of Evidence--based pharmacy principles to develop and evaluate practice guidelines	3.5
10	Appraising the evidence: Critiquing practice guidelines	3.5
11	Practical Session / Journal Club	3.5
	Total	**38**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	15
4	**Others (specify):**	--
	Total	45

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Mid-term exam**	Week 6-8	20%
2	**Journal club**	Week 9 - 11	30%
3	**Final exam**	Weeks 12-14	50%

7. Learning Resources

1	**Required Textbooks**	• Straus, S. E., Glasziou, P., Richardson, W. S., & Haynes, R. B. (2019). Evidence-Based Medicine E-Book: How to Practice and Teach EBM. Elsevier Health Sciences. • Bryant, p., Pace H., (2008). The Pharmacists Guide to Evidence-Based Medicine for Clinical Decision Making
2	**Essential References Materials**	• Straus, S. E., Glasziou, P., Richardson, W. S., & Haynes, R. B. (2019). Evidence-Based Medicine E-Book: How to Practice and Teach EBM. Elsevier Health Sciences. • Bryant, p., Pace H., (2008). The Pharmacists Guide to Evidence-Based Medicine for Clinical Decision Making
3	**Electronic Materials**	None
4	**Other Learning Materials**	• The CONsolidated Standards of Reporting Trials (CONSORT 2010) • The PRISMA Statement for Reporting Systematic Reviews and Meta-Analyses of Studies (2009) Evidence-Based Medicine: Common Misconceptions, Barriers, and Practical Solutions by Jay Siwek

Description of Internship Year taught in the Pharm D program

Description of Internship Year taught in the Pharm D program

Dates and times allocation of field experience activities.

- Number of weeks: (42) week
- Number of days: (251) day
- Number of hours: (1,680) hour

Dates: 42 weeks from the starting date of experiential program rotations
Time: From 8:00 AM to 4:00 PM (at least 40 hours per week)
The APPE includes 7 rotations spanning over a period of 42 weeks.
The 7 rotations include 5 core rotations and 2 elective rotations.
The duration of each core and elective rotation is 6 weeks

No	Course Title	Code/No.
1	**APPE: Clinical Rotation I**	**PHP 483**
2	**APPE: Clinical Rotation II**	**PHP 484**
3	**APPE: Advanced Institutional Pharmacy**	**PHP 485**
4	**APPE: Advanced Community Pharmacy**	**PHP 486**
5	**APPE: Elective Clinical Rotation I**	**PHP 487**
6	**APPE: Elective Rotation I**	
	APPE: Elective Rotation I	

APPE: Advanced Pharmacy Practice Experience

2.Alignment of Learning Outcomes with Training Activities and Assessment Methods

Code	Learning Outcomes	Training Methods/Activities	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe an appropriate pharmacotherapeutic and disease-related knowledge in various healthcare settings	· Clinical rounds· Demonstration· Verbal instructions · Case based discussion· Group discussion	· Assignments· Preceptor evaluation form
1.2	Recognize regulations, policies, and procedures of delivering all activities related to pharmacy profession	· Demonstration · Verbal instructions · Group discussion	· Assignments· Preceptor evaluation form

Code	Learning Outcomes	Training Methods/Activities	Assessment Methods
2.0	**Skills**		
2.1	Communicate effectively, both in writing and verbally with patients and healthcare providers to improve patient care	· Clinical rounds· Patient interview/counselling· Elec tronic medical healthcare system utilization· Demonstration · Verbal instructions	· Assignments· Prec eptor evaluation form
2.2	Participate in intra- and inter-professional collaboration, serving as an active team player	· Clinical rounds· Didactic seminars· Demonstration · Verbal instructions	· Assignments· Prec eptor evaluation form
2.3	Integrate, and apply knowledge from the foundational sciences (i.e., pharmaceutical, social/behavioral/ administrative, and clinical sciences) to evaluate the scientific literature, advance population health and patient centered care	· Clinical rounds· Group discussion· Case-based discussion· Demonstration · Verbal instructions	· Assignments· Prec eptor evaluation form
2.4	Optimize patient-specific outcomes for patients using the pharmacists' patient care process model (collect, assess, plan, implement and follow - up)	· Clinical rounds· Patient interview/counselling· Gro up discussion· Case-based discussion· Demonstration · Verbal instructions	· Assignments· Prec eptor evaluation form
2.5	Manage patient healthcare needs using human, financial, and physical resources to optimize the safety and efficacy of medication use systems	· Patient interview/counselling· Elec tronic medical healthcare system utilization· Pharmacy automation· Demonstratio n · Verbal instructions	· Assignments· Prec eptor evaluation form
2.6	Utilize advanced instruments, materials, and techniques and apply fundamental drug development skills in appropriate settings	· Electronic medical healthcare system utilization· Pharmaceutical compounding training· Demonstration · Verbal instructions	· Assignments· Prec eptor evaluation form
3.0	**Values**		

Code	Learning Outcomes	Training Methods/Activities	Assessment Methods
3.1	Demonstrate professional conduct by displaying integrity, commitments, compassion, empathy, and respect	· Clinical rounds· Demonstration · Verbal instructions	· Preceptor evaluation form
3.2	Adhere to moral and ethical principles and values such as honesty, honor, dependability and trustworthiness	· Clinical rounds· Demonstration · Verbal instructions	· Preceptor evaluation form
3.3	Demonstrate a commitment to continuous professional development	· Clinical rounds· Demonstration · Verbal instructions	· Preceptor evaluation form

3. Field Experience Learning Outcomes Assessment

a. Students Assessment Timetable

#	Assessment task*	Assessment timing (Week)	Percentageof Total Assessment Score
1	**Mid evaluation**	3rd week of rotation	NA
2	**Final evaluation**	6th week of rotation	100%
	Note: Assessment tasks differ from one rotation to another, and they can include presentations, journal clubs, assignments, pharmaceutical compounding, patient counseling, IV compounding, workshops, didactics and seminars, community outreach and community service planning, drug information tasks, writing teaching philosophy, writing a CV, writing a manuscript, conducting clinical research, and group discussions.		

***Assessment task** (i.e., Practical test, oral test, presentation, group project, essay, etc.)

4. Safety and Risk Management

No	Potential Risks	Safety Actions	Risk Management Procedures
1	Infections e.g., hepatitis	Immunizations	NA
2	Respiratory infection	Basic infection control skills training, had hygiene and personal protective equipment.	NA
3	Hazardous materials	Dealing with hazardous chemicals and medical waste training	NA

Description of Elective Courses taught in the Pharm D program

S.no	Course code	Course name
1	PHG461	Molecular Pharmacology
2	PHG 471	Pharmacogenomics
3	PHC 451	Radiopharmacy
4	PHC 432	Herbal Medicine
5	PHT 424	Pharmaceutical Quality Assurances
6	PHT 441	Pharmaceutical Biotechnology
7	PHT 423	Biopharmaceutics
8	PHP 418	SPLE
9	PHP 422	Integrated Pharmacotherapy: Pediatric and geriatric
10	PHP 428	Integrated pharmacotherapy ambulatory care

Molecular Pharmacology

Course Name: Molecular Pharmacology	علم الأدوية الجزيئي	إسم المقرر:
Course Code & No.: PHG461	PHG461	رقم المقرر ورمزه:
Credits:2(2+0+0)	(2+0+0)2	عدد الساعات:
Prerequisite: PHG241	PHG241	المتطلبات المسبقة:
Level:6	6	المستوى:
Course type: Elective	اختياري	نوع الدورة:

1. Course Description

The course deals with the molecular aspects of biological membranes, organic cation and anion transport through them and how it is affected by the drugs. It also deals with the pharmacological aspects of neurotransmitters and other endogenous substances, their interactions with their respective receptors and the resulting effects in the body. The dynamic nature of receptors during health and disease and the effect of drugs resulting in up-regulation or down-regulation of their targeted receptors is also discussed.

2. Course Main Objectives

Upon successful completion of this course, the following objectives should be covered:

- The molecular assembly of biological membranes and cell walls and the passage of molecules and ions across them. Study the molecular nature of ion channels as drug targets.
- The molecular aspects of the action of neurotransmitters and other endogenous molecules.
- The different types and subtypes of the receptors of these neurotransmitters.
- The role of neurotransmitters in health and disease states and the basis behind drug treatment and to appreciate the diversity of chemical classes of drugs used to treat a particular disease state

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Outline the molecular aspects of biological membranes, organic cation and anion transport through them and how it is affected by the drugs	Lectures	Multiple choice questionsShort notes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.2	Outline the pharmacological aspects of neurotransmitters and other endogenous substances, their interactions with their respective receptors and the resulting effects in the body	Lectures	Multiple choice questionsShort notes
	Describe the dynamic nature of receptors during health and disease		Multiple choice questions
	Describe the effect of drugs resulting in up-regulation or down-regulation of their targeted receptors		Short notes
2.0	**Skills**		
2.1	Explain the pharmacological aspects of neurotransmitters and other endogenous substances, their interactions with their respective receptors and the resulting effects in the body.	Lectures	Multiple choice questionsShort notes
2.2	Compare the effect of drugs resulting in up-regulation or down-regulation of their targeted receptors	Lectures	Multiple choice questionsShort notes
3.0	**Values**		

4. Course Content

No	List of Topics	Contact Hours
1	Introduction: General concepts and functions of biological membranes.	3
2	General concepts of receptors and their classifications.	3
3	Cholinergic receptors, their natural ligands and their synthesis.	3
4	Adrenergic receptors, their natural ligands and their synthesis.	3
5	Dopaminergic receptors, their natural ligands and their synthesis.	3
6	Serotoninergic receptors, their natural ligands and their synthesis.	3
7	Gamma Aminobutyric Acid receptors, their natural ligands and their synthesis	3
8	Histamine receptors, their natural ligands and their synthesis.	3
9	MAO enzymes, their natural substrates and their synthesis.	3

No	List of Topics	Contact Hours
10	Sodium ion channels and drugs affecting them.	3
11	Calcium ion channels and drugs affecting them.	
12	Chloride ion channels and Coupled sodium/chloride ion channels and drugs affecting them.	
13	Membrane-bound ATPases: Such as Na+,K+- ATPase (Cardiac glycosides), H+,K+- ATPase	
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	
4	**Others (specify) self-learning**	15
	Total	45

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Midterm 1**	8-10	20
2	**Midterm 2**	15	20
3	**Final exam**	16	60

7. Learning Resources

1	**Required Textbooks**	• Williams and Lemke, Foye's Principles of Medicinal Chemistry 15th. Edition, 2002. Lippincott Williams & Wilkins. • Wilson and Gisvold's. Textbook Of Medicinal and Pharmaceutical Chemistry, Latest edition. Lippincott Company. • G. Thomas. Medicinal Chemistry: An Introduction, 2000. John Wiley & Sons Ltd., England. • Wingard, Brady, Lamer & Schwartz, Human Pharmacology: Molecular to Clinical, 1991 .Mosby Yearbook. • Graham L. Patrick. An Introduction to Medicinal Chemistry, 1995. Oxford University Press. • Rang and Dale. Pharmacology 7th edition. 2012. Elsevier.

	Required Textbooks	• Lippincott's illustrated Reviews: Pharmacology, 4th Ed. 2008. Williams and Wilkins Publisher Co., N.Y
2	**Essential References Materials**	• Stone, T.W. CNS Neurotransmitters and Neuromodulators, Neuroactive steroids. 1996, Barnes and Noble. • Rang and Dale. Pharmacology 7th edition. 2012. Elsevier. • Lippincott's illustrated Reviews: Pharmacology, 4th Ed. 2008. Williams and Wilkins Publisher Co., N.Y.
3	**Electronic Materials**	• http://www.library.qu.edu.sa/Pages/default.aspx • http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about • http://accesspharmacy.mhmedical.com/ss/About.aspx • http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/About.aspx • http://search.proquest.com/
4	**Other Learning Materials**	None

Pharmacogenomics

Course Name: Pharmacogenomics	الصيدلة الجينية	إسم الالمقرر:
Course Code & No.: PHG471	PHG471	رقم المقرر ورمزه:
Credits:2(2+0+0)	(2+0+0)2	عدد الساعات:
Prerequisite: PHG241	PHG241	المتطلبات المسبقة:
Level:5	5	المستوى:
Course type: Elective	اختياري	نوع الدورة:

1. Course Description

To present various perspectives on pharmacogenomics and a historical perspective on this field. Students will be exposed to the fundamentals of pharmacogenomics including basic genetic concepts, analytical methods used to identify genetic variations as well as pharmacogenomics variations in treatments of various diseases.

2. Course Main Objectives

- To explain the principles of pharmacogenomics ranging from genetic principles and the inheritance of complex traits to specific examples of pharmacogenomics in drug therapy.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the principles and applications of human genetics and genomics in drug therapy optimization, patient care, and counseling	Lectures	Multiple choice questionsShort notes
1.2	List legal and ethical issues in genetic testing and patient stratification in clinical trials	Lectures	Multiple choice questionsShort notes
2.0	**Skills**		
2.1	Predict how alleles segregate and analyze different types of environmental and genetic factors that affect the development of the allele phenotype, including drug response and explain the multifactorial nature of most human traits, including drug response	Lectures	Multiple choice questionsShort notes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.2	Interpret how human genetic variation affects drug metabolism, activation, and disposition and how polymorphisms and linkage are used to identify candidate genes.	Lectures	Multiple choice questionsShort notes
2.3	Predict and estimate the advantages, limitations, and dangers of predictive testing for genetic disease and drug response	Lectures	Multiple choice questionsShort notes
3.0	**Values**		
3.1	List and use, the many comprehensive genomic databases and resources on the Internet.	Online genomic resourcesBioinformatics software	Surveys

4. Course Content

No	List of Topics	Contact Hours
1	· The history of genetics and Pharmacogenetics· Factors Affecting Gene Frequencies	3
2	· Gene Expression – transcription and translation	3
3	· Locus and Allelic Heterogeneity· Quantitative Genetics and Multifactorial Inheritance	3
4	· Genetic markers and linkage mapping· Genomic Technologies: Microarrays and Quantitative PCR	3
5	Pedigree Analysis	3
6	Polygenic traits and environmental factors	3
7	· Drug Target Pharmacogenomics· Drug metabolizing enzymes· Drug transporters	3
8	Oncology Pharmacogenomics	3
9	Cardiovascular Pharmacogenomics	3
10	Ethics and the Genome Revolution	3
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify) self-learning	15
	Total	45

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm	8-10	20
2	Quiz	15	10
3	Assignment	16	20
4	Final exam	18	50

7. Learning Resources

1	Required Textbooks	1- Pharmacogenomics an Introduction and Clinical Perspective Joseph S. Bertino, Angela Kashuba, Joseph D. Ma, Uwe Fuhr, C. Lindsay DeVane, McGraw Hill Professional, Sep 18, 2012 - Medical - 288 pages.
2	Essential References Materials	Variable number of reports from different journals are continuously discussed in class/or given as assignments.
3	Electronic Materials	https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/book.aspx?bookid=511#40849379
4	Other Learning Materials	None

Radiopharmacy

Course Name: Radiopharmacy	الكيمياء العضوية الصيدلانية	إسم المقرر:
Course Code & No.: PHC 451	PHC 451	رقم المقرر ورمزه:
Credits: 2(2+0+0)	(2+0+0)2	عدد الساعات: المعتمدة:
Prerequisite: None	None	المتطلب: السابق:
Level: 7	7	المستوى:
Course type: Elective	اختياري	نوع الدورة:

1. Course Description

This course will deal with the atomic & nuclear structure and, the reasons that lead to phenomenon of radioactivity. This also includes the radioactivity detectors, production of radioisotopes, preparation and, quality control of radiopharmaceuticals along with their specific applications to therapeutic and diagnostic purpose. The radiation hazards involved with radiation exposure and, protection from them will also be imparted.

2. Course Main Objectives

The students will be familiarized with

(i) Known to concepts, working fundamentals, preparation, compounding, usage, precautions and detections of radioactive materials used in diagnosis and therapy.

(ii) Specific radiopharmaceutical's on-site preparation techniques, purification, quality-control, working knowledge and methods in administration as well as detection for different pharmaceutical conditions by use of suitable radio-activity detectors

(iii) Various other therapeutic and diagnostic applications of radiopharmaceuticals and recommended formulations thereof will be imparted to students. The biohazard of radioactivity exposure and its precaution measures will also be addressed.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe different techniques to produce and, identify different radioisotopes and radiopharmaceuticals	Lectures	MCQs, short notes
1.2	Describe radiation and, types of particles emitted from radionuclide.	Lectures	MCQs, short notes
1.3	Recognize the hazards involved with radiation exposure and recommend precautionary measures.	Lectures	MCQs, short notes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	**Skills**		
2.1	Differentiate among types of radioactivity detectors & counters and, judge their applicability	Lectures	MCQs, short notes
2.2	Calculate the half-life of radionuclide, and decipher the labels on radiopharmaceuticals.	Lectures	MCQs, short notes
3.0	**Values**		

4. Course Content

No	List of Topics	Contact Hours
1	Atomic structure (electronic structure of the atom, nuclear structure, thedifference between chemical reactions and nuclear reactions)	3
2	Isotopes (stable and, radioactive isotopes, naturally occurring and artificially produced isotopes)	3
3	Radioactive decay (decay mechanisms, radioactivity, definition, units and calculations)	3
4	Radioactive decay equations (transmutations, half-life and its significance, 14C Dating)	3
5	Instruments and detectors for measuring radioactivity (Gas-filled detectors, liquid scintillators, solid scintillators, gamma counters and cameras)	3
6	Production of radionuclides (reactors, cyclotron, generators), Radiolabeling	3
7	In Vitro and In Vivo Non-imaging Tests, Diagnostic Uses of Radiopharmaceuticals in Nuclear Medicine	3
8	Quality control of radiopharmaceuticals (radiochemical purity systems for radiopharmaceuticals), TLC for technetium radiopharmaceuticals, TLC for other radiopharmaceuticals, solid phase extraction cartridge method	3
9	Characteristics of specific radiopharmaceuticals,	3
10	Technetium labeled denatured RBCs), Technetium in vitro labeling of RBCs, radiopharmaceuticals for gastric emptying, Methods for concentrating 99mTC generator elute.	3
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	
4	Others (specify) self Study	60
	Total	90

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm I	5	30%
2	Assignment	7	10%
3	Quiz	9	10%
4	Final Exam	15	50%

7. Learning Resources

1	Required Textbooks	Gopal B Saha, Fundamentals of Nuclear Pharmacy, Sixth Ed., Springer 2010; ISBN 978 1 4419 5859 4, e ISBN 978 1 4419 58600Peter F. Sharp, Howard G. Gemmell and Alison D. Murray (Eds), Practical Nuclear Medicine,3rd Ed., Springer, 2005; ISBN 1-85233-875-XCB Simpson, Textbook of Radiopharmacy: Theory and Practice. Ed CB Sampson. Gordon and Breach
2	Essential References Materials	Radiopharmaceutical in Nuclear Pharmacy and Nuclear Medicine, Amazon, 2nd edition.The Radiopharmacy, A Technologist's Guide, EANM (European Association of Nuclear Medicine), Lantheus Medical Imaging,USA British Pharmacopoeia, US Pharmacopoeia & National Formulary -European PharmacopoeiaEuropean Commission Guidelines on Radioactive Materials.
3	Electronic Materials	British Pharmacopoeia Chapter IV on Radiopharmaceuticals- Online available resource, (Available by Registration from Jan, 2014)
4	Other Learning Materials	None

Herbal Medicine

Course Name: Herbal Medicine	التداوى بالاعشاب	إسم المقرر:
Course Code & No.: PHC432	PHC432	رقم المقرر ورمزه:
Credits:2(2+0+0)	(2+0+0)2	عدد الساعات:
Prerequisite: PHC231	PHC231	المتطلبات المسبقة:
Level: 5	5	المستوى:
Course type: Elective	اختياري	نوع الدورة:

1. Course Description

Herbal Medicine course aims to provide the necessary background for the students about how medicinal herbs are incorporated into the practice, particularly in regards to their therapeutic properties, efficacy (or lack thereof), and safety concerns, including quality control and potential adverse effects.

2. Course Main Objectives

The course aims to introduce students to:

- To provide students with knowledge and understanding of the herbal medicinal agents from different plants/ natural sources.
- To provide an understanding of the phototherapeutic concepts leading with herbal medicine.
- To know the food-drugs interaction and their effects of bioactivities.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe the phytotherapeutic concepts, different classes of bioactive metabolites and different methods of quality control as applied to herbal medicines.	Lectures	MCQs, short notes and short essaysHome assignment
1.2	Recognize herbal materials employed for the treatment of variable ailments.	Lectures	MCQs, short notes and short essaysHome assignment
2.0	**Skills**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.1	Predict the biological activity effects from drug-food interactions	Lectures	MCQs, short notes and short essaysHome assignment
3.0	**Values**		

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to physiotherapy and herbal medicine. Methods of quality control of herbal drugs	3
2	Herbal drugs used in gastrointestinal disorders	3
3	Herbal drugs used in cardiovascular disorder	3
4	Herbal drugs used in respiratory system disorders	3
5	Herbal drugs used in Urinary system disorders	3
6	Herbal drugs used in central nervous system disorders	3
7	Herbal drugs used in skin disorders	3
8	Herbal drugs used in endocrine system disorders	3
9	Herbal drugs used in musculoskeletal system disorders	3
10	Herbal drug and herbal food interaction (effect in bioactivity of the food and drug interaction).	3
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	--
4	**Others (specify): Assignment Library Learning hours**	10 10 40
	Total	90

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Midterm**	6	30 %
2	**Assignment**	9	20%
3	**Final exam**	12	50 %

7. Learning Resources

1	**Required Textbooks**	a. Kerry Bone and Simon Mills (Auth.)-Principles and Practice of Phytotherapy. Modern Herbal Medicine-Churchill Livingstone (2013) b. Fundamentals of Pharmacognosy and Phytotherapy; Michael Heinrich; Churchill Livingstone Elsevier; 2007.
2	**Essential References Materials**	• Gunnar Samuelsson. Drugs of Natural Origin. 4th. edition 1999. Swedish Pharmaceutical press. • J. Higgins, D.J. Best, J. Jones, "Biotechnology, Principles and Applications", Blackwell Scientific Publications (1995). • WHO monographs on selected medicinal plants, World Health Organization, Paperback Publisher, vol. 1, (1999). • WHO monographs on selected medicinal plants, World Health Organization, Paperback Publisher, vol. 2, (2002).
3	**Electronic Materials**	http://www.pharmacylibrary.com.ezproxy.qu.edu.sa/public/about http://accesspharmacy.mhmedical.com/ss/About.aspx http://accesspharmacy.mhmedical.com.ezproxy.qu.edu.sa/ss/ About.aspx https://www.dropbox.com/s/sxsjit1cih1yx2k/British%20National %20Formulary.pdf?dl=0 https://www.dropbox.com/s/x7b3scj66yfwp50/BNF%20for%20C hildren%202014-2015%5BNewMedicalBooks%5D.pdf?dl=0 www.ncbi.nlm.nih.gov/SNP/ Encyclopedia of Medicinal Plants
4	**Other Learning Materials**	Computer-based programs/CD, professional standards or regulations and software.

Pharmaceutical Quality Assurances

Course Name: Pharmaceutical Quality Assurances	جودة الدواء الصيدلانية	إسم المقرر:
Course Code & No.: PHT 424	PHT 424	رقم المقرر ورمزه:
Credits:2(2+0+0)	(2+0+0)2	عدد الساعات: المعتمدة:
Prerequisite: None	لا يوجد	المتطلب: السابق:
Level: 6	6	المستوى:
Course type: Elective	اختياري	نوع الدورة: اختياري

1. Course Description

In this course, the principles of quality control, quality assurance and evaluation of different dosage forms will be considered

2. Course Main Objectives

This subject offers the necessary theoretical background and basis to students who are interested in drug manufacturing and pharmaceutical factories

*This subject deals with subjects very related to industrial pharmacy and pharmaceutical factories including good manufacturing practices in manufacturing drugs, safety measures that must be followed in industrial factories, total quality assurances, validations, and corresponding types of validations

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Outline different Good manufacturing practice definitions	Lectures	MCQs, short notes and short essays
1.2	Record different Sources of quality variations	Lectures	MCQs, short notes and short essays
1.3	Name different components of validations	Lectures	MCQs, short notes and short essays
2.0	**Skills**		
2.1	Differentiate between different types of solid dosage forms Differentiate between different categories of GMP	Lectures	MCQs, short notes and short essays

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.2	Compare between different Sources of quality variations	Lectures	MCQs, short notes and short essays
3.0	**Values**		
3.1	Explain different concepts of validations	Lectures	MCQs, short notes and short essays

4. Course Content

No	List of Topics	Contact Hours
1	Good manufacturing practice (GMP).	2.72
2	Good manufacturing practice (GMP) cont…	2.72
3	Total quality assurances	2.72
4	Total quality assurances cont…..	2.72
5	Sources of quality variations	2.72
6	Validations	2.72
7	Validations cont…..	2.72
8	Preformulations	2.72
9	Quality control evaluations of solid dosage form	2.72
10	Quality control evaluations of semisolid dosage form	2.72
11	Quality control evaluations of liquid dosage form	2.72
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	--
4	**Others (specify):**	--
	Total	30

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Midterm**	6	30 %
2	**Assignments**	9	10%
3	**Final exam**	12	60 %

7. Learning Resources

1	**Required Textbooks**	Aly A. bdel Rahman, and Fars Kaed Alanazi. Basis of industrial pharmacy. First edition (2008). *Leon Lachman & Hebert. The theory and the practice of industrial pharmacy. Library of congress *Adel M.Saker &Hassan M.EL.Sabbagh .Introduction to industrial pharmacy.(1972)
2	**Essential References Materials**	Aulton's Pharmaceutics: The design and manufacture of medicines – 2007 – 3rd edition (Edibted by Michael E. Aulton) *Rules and Guidance for pharmaceutical Manufactures. HMSO London (1993)
3	**Electronic Materials**	https://www.dropbox.com/s/sxsjit1cih1yx2k/British%20National%20Formulary.pdf?dl https://www.dropbox.com/s/x7b3scj66yfwp50/BNF%20for%20Children%202014-2015%5bNewMedicalBooks%5d.pdf?dl
4	**Other Learning Materials**	N/A

Pharmaceutical Biotechnology

Course Name: Pharmaceutical Biotechnology	التقنية الحيوية	اسم المقرر:
Course Code & No.: PHT441	PHT441	رقم المقرر ورمزه:
Credits: 2(2+0)	(2+0)2	عدد الساعات:
Prerequisite: None	لا يوجد	المتطلبات المسبقة:
Level: 7	7	المستوى:
Course type: Elective	إختياري	نوع الدورة:

1. Course Description

This course is designed to introduce the students to the general principles of pharmaceutical Biotechnology regarding general pharmaceutical production, sources of biotech products, routes of drugs' administration, process and stages of drug development, and safety. It describes a general description of biotechnology overview, development of biotechnology, microbial enzymes and hormones, microbial growth phases - metabolic products, fermentation-immobilization, molecular biotechnology gene transfer, PCR, DNA cloning, gene therapy, products of genetically engineered microbes, vaccines products, monoclonal antibodies, and some selected topics of bioinformatics.

2. Course Main Objectives

The course aims to introduce students to:

- Understand the biophysical and biochemical analyses of recombinant protein.
- Discuss the production of biotechnology products based on traditional methods.
- Discuss the production of biotechnology products based on recombinant technology.
- Describe the formulation of biotechnology, including the biopharmaceutical considerations.
- Understand the pharmacokinetics and pharmacodynamics of peptides and nucleic acid-based products.
- Discuss gene therapy and vaccines.
- Understand the clinical applications of biotechnology and biotechnology related products.
- Recognize the importance of this area to the clinical practice issue.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and understanding**	
1.1	State the historical overview of biotechnology and recognize the concept of fermentation.	K.1

CLOs		Aligned PLOs
1.2	Outline the molecular tools for recombinant product development and the products of genetically engineered microbes.	K 3
1.3	Describe gene therapy, monoclonal antibodies, and conventional and molecular Vaccines.	K 3
2	**Cognitive Skills:**	
2.1	Explain the formulation of biotech products including biopharmaceutical considerations.	S 1
2.2	Explain the impact of genetic biotechnology on drug discovery and the role of bioinformatics.	S 3
3	**Values**	
3.1	Recognize the industrially important microorganisms and their pharmaceutical products obtained by fermentation.	V 1

4. Course Content

No	List of Topics	Contact Hours
1	Biotechnology; Overview	2.73
2	Development of Biotechnology	2.73
3	Microbial Enzymes and Hormones	2.73
4	Microbial Growth Phases - Metabolic Products	2.73
5	Fermentation-Immobilization	2.73
6	Molecular Biotechnology Gene Transfer	2.73
7	PCR- Molecular Biotechnology Techniques	2.73
8	DNA cloning	2.73
9	Antisense- Aptamers-Gene Therapy	2.73
10	Products of genetically engineered microbes & Selected topics (bioinformatics)	2.73
11	Conventional and Genomic Vaccines Products & Monoclonal Antibodies	2.7
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	--
4	Others (specify): Learning hours	
	Total	30

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm	6	30 %
2	Quiz	9	10%
3	Final exam	12	60 %

7. Learning Resources

1	Required Textbooks	1. Renneberg, R. (2023). Biotechnology for beginners. Academic Press. 2. Moo-Young, M. (2019). Comprehensive biotechnology. Elsevier. 3. Walsh G., Murphy B. (Eds.) Biopharmaceuticals, and Industrial Perspective. Kluwer, Dordrecht, 1999.
2	Essential References Materials	4. Khan FA. 2020. Biotechnology fundamentals. Third edition. ed. Boca Raton: CRC Press. 5. Walsh GD, NetLibrary I. 2003. Biopharmaceuticals : biochemistry and biotechnology. 2nd ed. Chichester, West Sussex, England; Hoboken, NJ: J. Wiley.
3	Electronic Materials	6. Pubmed.com 7. Biotechnology: http://www.bio.org/ 8. Industry Organization home page: http://www.phrma.org/ (US pharmaceutical manufacturers' home page) 9. http://www.fda.gov/
4	Other Learning Materials	N/A

Biopharmaceutics

Course Name: Biopharmaceutics	صيدلة حيوية	إسم المقرر:
Course Code & No.: PHT 423	PHT423	رقم المقرر ورمزه:
Credits: 2(2+0)	(2+0)2	عدد الساعات:
Prerequisite: None	لا يوجد	المتطلبات المسبقة:
Level: 8	8	المستوى:
Course type: Elective	إختياري	نوع الدورة:

1. Course Description

This course will deal with the effects of the physicochemical properties of the drug, the formulation factors, the dosage form, the route of administration, and the physiological factors on the rate and extent of systemic drug absorption. Also in vitro methods and the application of different equations used to study the dissolution from dosage forms will be discussed. The concept of clearance and the mathematical relationships that describe drug–protein binding and methods used for the study and calculation of binding parameters will be covered.

2. Course Main Objectives

The course aims to introduce students to:

- The concepts of biopharmaceutic terminology
- Principles of drug transfer from the dosage form to the gastrointestinal fluids as well as the arrival of the drug at the systemic circulation after oral administration.
- Principles and applications of formulation factors affecting oral absorption.
- Dissolution theory and dissolution from suspension and immediate-release tablets
- Mathematical relationships that describe drug-protein binding and methods used for
- The concept and significance of the volume of distribution
- Principles of controlled-release dosage forms

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Define the concepts of bioavailability and bioequivalence.	Lecture	MCQ & short notes
1.2	Describe the mechanisms of drug transport and drug release from dosage forms	Lecture	MCQ & short notes

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.3	List formulation factors affecting oral absorption	Lecture	MCQ & short notes
2.0	**Skills**		
2.1	Explain the relationship among physicochemical and biological factors, dosage forms, routes of administration and therapeutic outcomes	Lecture	MCQ & short notes
2.2	Calculation of protein binding parameters	Lecture	MCQ & short notes
2.3	Compare different dosage forms and explain how formulation additives affect drug absorption and drug bioavailability	Lecture	MCQ & short notes
3.0	**Values**		
3.1	To work within a team and lead it effectively, and make decisions	Lecture	MCQ & short notes

4. Course Content

No	List of Topics	Contact Hours
1	Introduction in Biopharmaceutics	2.7
2	Rate parameters and physical processes relevant to drug absorption	2.7
3	Bioavailability:	2.7
4	Supply of the gastrointestinal fluids with the drug:	2.7
5	Delivery of the drug to and removal of drug from uptake sites	2.7
6	Dissolution theory and dissolution from suspension &tablets	2.7
7	Protein binding & volume of distribution	2.7
8	Renal and hepatic clearance	2.7
9	Formulation factors affecting oral absorption	2.7
10	Controlled-release dosage forms	2.7
11	Controlled-release dosage forms	2.7
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	NA
4	**Others (Learning hours)**	
	Total	30

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Mid-term exam**	Week 6-8	30%
2	**Assignments**	Week 9	10%
3	**Final exam**	Weeks12 -14	60%

7. Learning Resources

1	**Required Textbooks**	1. L. Shargel and A.B.C. YU, Applied Biopharmaceutics and Pharmacokinetics, Appleton & Langel McGraw-Hill, NY, USA. 5th edition, 2005 2. M. Gibaldi, Biopharmaceutics and Clinical pharmacokinetics, Latest edition, Lea and Febiger,Philadelphia, USA. 4th edition, 1991
2	**Essential References Materials**	*Aulton's Pharmaceutics: The design and manufacture of medicines – 2007 – 3rd edition (Edibted by Michael E. Aulton)
3	**Electronic Materials**	
4	**Other Learning Materials**	None

Saudi Pharmacist Licensure Preparation

Course Name: Saudi Pharmacist Licensure Preparation	إعداد ترخيص الصيدلي السعودي	إسم المقرر:
Course Code & No.: PHP 418	PHP 418	رقم المقرر ورمزه:
Credits: 2(2+0)	(2+0)2	عدد الساعات:
Prerequisite: PHP364	PHP364	المتطلبات المسبقة:
Level: 8	8	المستوى:
Course type: Elective	إختياري	نوع الدورة:

1. Course Description

This course provides students with important information about the topics covered on the SPLE and the competency areas in which candidates will be tested, including a comprehensive knowledge in four major pharmacy content areas: Basic Biomedical Sciences, Pharmaceutical Sciences, Social/Behavioral/Administrative Sciences and Clinical Sciences.

2. Course Main Objectives

- To prepare students for SPLE exam
- Understand the basics and concepts of the SPLE exam

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Describe essential biomedical, pharmaceutical, social, behavioral, administrative and clinical sciences knowledge related to the development and use of medications, natural remedies, and other therapies for the prevention and treatment.	Lecture	MCQ & survey
1.2	Describe the concepts and principles of various pharmacy practice settings.	Lecture	MCQ & survey
1.3	Recognize the role of pharmacists according to legal, ethical and professional standards in promoting health and prevention and treatment.	Lecture	MCQ & survey

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.4	Recognize research and investigation methods in the pharmacy field.	Lecture	MCQ & survey
2.0	**Skills**		
2.1	Integrate pharmaceutical sciences with pharmacy applications.	Lecture	MCQ & survey
2.2	Engage in inter-professional healthcare education activities.	Lecture	MCQ & survey
2.3	Evaluate scientific and professional literature critically to be utilized in evidence-based practice, conducting research and problem-solving.	Lecture	MCQ & survey
2.4	Use advanced techniques, instruments and materials in practical activities and apply basic drug development skills in relevant settings.	Lecture	MCQ & survey
2.5	Use mathematical operations and quantitative methods to process data in various pharmacy fields and utilize appropriate information technologies to optimize medication use and patient care.	Lecture	MCQ & survey
2.6	Contribute to decision making processes by providing accurate and relevant recommendations in various settings.	Lecture	MCQ & survey
2.7	Interpret information obtained from different resources to provide creative solutions for complex problems.	Lecture	MCQ & survey
2.8	Communicate clearly and effectively with health care professionals, patients, caregivers, administrative and supportive personnel and the public in various settings	Lecture	MCQ & survey
2.9	Construct patient-centered evidence-based pharmaceutical care plans.	Lecture	MCQ & survey
3.0	**Values**		
3.1	Demonstrate leadership skills, accountability and acceptance of responsibility within a team in various settings.	Lecture	Survey
3.2	Advocate patient rights to safe and effective medication use in various setting.	Lecture	MCQ

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.3	Evaluate own learning and performance, make decision regarding self-development and practice reflective and independent thinking to effectively manage and respond to routine or unanticipated circumstances.	Lecture	Survey

4. Course Content

No	List of Topics	Contact Hours
1	Basic Biomedical Sciences :(Physiology, Biochemistry,)	2
2	Basic Biomedical Sciences:(Microbiology Related to Human Diseases, Immunology)	2
3	Pharmaceutical Sciences (Medicinal Chemistry)	2
4	Pharmaceutical Sciences (Pharmacology and Toxicology)	2
5	Pharmaceutical Sciences (Pharmacognosy and Dietary Supplements)	2
6	Pharmaceutical Sciences (Pharmaceutics/Biopharmaceutics, Pharmacokinetics)	2
7	Pharmaceutical Sciences (Sterile and Nonsterile Compounding)	2
8	Social/Behavioral/Administrative Sciences (Health Care Delivery Systems and Public Health, Population-Based Care and Pharmacoepidemiology, Pharmacoeconomics and Humanistic Outcomes of Health Care Delivery)	2
9	Social/Behavioral/Administrative Sciences (Pharmacy Practice Management, Pharmacy Law and Regulatory Affairs, Biostatistics and Research Design)	2
10	Social/Behavioral/Administrative Sciences (Ethical Decision Making, Professional Communication, Social and Behavioral Aspects of Pharmacy Practice, Medication Dispensing and Distribution Systems)	2
11	Clinical Sciences (Drug Information and Evidence-based Practice)	2
12	Clinical Sciences (Clinical Pharmacokinetics, Clinical pharmacogenomics)	2
13	Clinical Sciences (Disease Prevention and Population Health)	2
14	Clinical Sciences (Patient Assessment)	2
15	Clinical Sciences (Clinical Pharmacology and Therapeutic Decision Making)	2
Total		**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	NA
4	**Others (Learning hours)**	
	Total	30

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Midterm exam**	6-12	40%
2	**Final exam**	17	60%

7. Learning Resources

1	**Required Textbooks**	• Dick R. Gourley , James C. Eoff III, The APhA Complete Review for Pharmacy, the American Pharmacists Association. William E Paul. Fundamental Immunology, Philadelphia, USA, Lippincott Williams & Wilkins. • Lippincott's Illustrated Reviews: Biochemistry.· Lippincott Illustrated Reviews: Pharmacology. • Leon Shargel, Alan H. Munick, Paul F. Souney, Larry N. Swanson. Comprehensive Pharmacy Review· Goodman & Gilman's: The Pharmacological Basis of Therapeutics. • Shargel, Applied Biopharmaceutics & Pharmacokinetics, the Middle East Observer, USA: Appleton and Lange. • Howard C. Ansel, Mitchell J. Stoklosa, Pharmaceutical Calculations. • Aulton, M., E., Pharmaceutics: The Science of Dosage Form Design, London Churchill Livingstone.· Karen E. Stine, Thomas M. Brown, Principles of Toxicology. • Karen Rascati. Essentials of Pharmacoeconomics. Lippincott Williams & Wilkins. • Brian L. Strom. Textbook of Pharmacoepidemiology.· Chisholm-Burns, Allison M. Vaillancourt, Marv Shepherd. Pharmacy Management, Leadership, Marketing, and Finance. • Nathaniel M. Rickles, Albert I. Wertheimer, Mickey C. Smith. Social And Behavioral Aspects of Pharmaceutical Care.

	Required Textbooks	• Rajender R. Aparasu and John P. Bentley. Principles of Research Design and Drug Literature Evaluation. • James E. De Muth. Basic Statistics and Pharmaceutical Statistical Applications. • Josef T. Dipiro Pharmacotherapy: A Pathophysiologic Approach· Koda-Kimble and Young's Applied Therapeutics: The Clinical Use of Drugs· Rhonda M. Jones , Raylene M. Rospond, Patient Assessment in Pharmacy Practice. • Karen J. Tietze, Clinical Skills for Pharmacists • Daniel L. Krinsky, Stefanie P. Ferreri, Brian Hemstreet, Anne L. Hume, Gail D. Newton, Carol J. Rollins and Karen J. Tietze, Handbook of Nonprescription Drugs: An Interactive Approach to Self-Care.
2	**Essential References Materials**	None
3	**Electronic Materials**	• Drug list in KSA https://www.sfda.gov.sa/en/drug/search/Pages/default.aspx • MOH list of required immunizations https://www.moh.gov.sa/en/Ministry/Rules/Pages/default.asp x دليل إجراءات و ضوابط المواد المخدرة و المؤثرات العقلية لألغراض الطبية و العلمية، الهيئة العامة للغذاء و الدواء • https://www.sfda.gov.sa/ar/drug/drug_reg/DocLib/anti_drugs.pdf • Lexicomp (handbook or online). Ohio: Wolters Kluwer Clinical Drug Information, Inc; Latest Edition.
4	**Other Learning Materials**	None

Pharmacotherapy of Pediatrics/Geriatrics

Course Name: Pharmacotherapy of Pediatrics/Geriatrics	العلاج الدوائي لطب الأطفال/ طب الشيخوخة	إسم المقرر:
Course Code & No.: PHP 422	PHP 422	رقم المقرر ورمزه:
Credits: 2(2+0)	(2+0)2	عدد الساعات:
Prerequisite: PHP251	PHP251	المتطلبات المسبقة:
Level: 6	6	المستوى:
Course type: Elective	إختياري	نوع الدورة:

1. Course Description

This course provides student pharmacists with a strong interest in geriatrics and pediatrics the opportunity to develop the necessary skills in providing optimal care for these specific populations. The curriculum emphasizes the impact of developmental and aging processes on drug therapy, guiding students in the application of age-appropriate dosing, administration, and the management of polypharmacy.

2. Course Main Objectives

- Discuss the unique pharmacotherapy needs and considerations for pediatric and geriatric patients.
- ·Assess a patient's medication therapy and identify actual/potential drug therapy problems specific to pediatric and geriatric patients.
- Develop a comprehensive care plan for pediatric and geriatric patients, considering the dosage formulations of the drugs used.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize the pharmacokinetic and pharmacodynamic differences in pediatric and geriatric patients.	Lecture	MCQ & short notes
1.2	Describe the key concepts related to the growth of pediatric populations and the aging of geriatric populations.	Lecture	MCQ & short notes
2.0	**Skills**		
2.1	Interpret patients' clinical data to make evidence-based decisions for managing pediatric and geriatric conditions.	Lecture	MCQ, short notes & patient cases

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.2	Communicate clearly and effectively with health care professionals, patients, caregivers	Lecture	MCQ, short notes & patient cases
2.3	Design appropriate care plans for managing pediatric and geriatric patients with various health conditions	Lecture	MCQ, short notes & patient cases
3.0	**Values**		
3.1	Demonstrate accountability and acceptance of responsibility within a team in various settings.	Lecture	Survey
3.2	Advocate patient rights to safe and effective medication use in various setting.	Lecture	MCQ, short notes & patient cases
3.3	Demonstrate empathy, professional attitude, ethical behavior, social and cultural awareness and proper judgment in various settings.	Lecture	Should be assessed during APPE

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to Pediatric Pharmacy Practice: Overview of Growth and Development	2
2	Unique Pharmaceutical Needs of Pediatric Patients: Pharmacokinetics & Drug Delivery	2
3	Neonatology Part 1: Introduction and Pharmacotherapy	2
4	Neonatology Part 2: Pharmacotherapy for common complications	2
5	Asthma, Pneumonia, Bronchiolitis, Otitis Media, and Croup	2
6	Diabetes Mellitus in Pediatric Patients	2
7	Juvenile Rheumatoid Arthritis (JRA), Cystic Fibrosis (CF) and Kawasaki Disease	2
8	Introduction to Geriatric Pharmacy Practice: Biomedical Principles of Aging (chapter 3)	2
9	American Geriatrics Society Beers Criteria	2
10	Case-based Applications of the Beers Criteria	2
11	Communicating with Elderly Patients & Palliative and Hospice Care (chapter 6)	2

No	List of Topics	Contact Hours
12	Part 1: Cardiovascular Disease in Geriatrics (Chapter 7): Orthostatic Hypotension, Hypertension, Lipid Disorders, Heart Failure, Acute Coronary Syndromes, Coronary Artery Disease	2
13	Part 2: Vascular and Cardiac Rhythmic Disorders in Geriatrics (Chapter 7): Peripheral Arterial Disease, Atrial Fibrillation, Stroke, Venous Thromboembolism	2
14	Chronic Obstructive Pulmonary Diseases (COPD) and Asthma (chapter 8)	2
15	Oral Health, Dysphagia, Gastroesophageal Reflux Disease (GERD), Nausea and Vomiting, Constipation, and Clostridium Difficile Diarrhea (Chapter 11)	2
	Total	**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	NA
4	**Others (Learning hours)**	60
	Total	90

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Quiz**	2-8	15%
2	**Quiz**	10	15%
3	**Midterm exam**	5-7	20%
4	**Final exam**	15	50%

7. Learning Resources

1	**Required Textbooks**	• Joseph T. Dipiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke1 Barbara G. Wells, L. Michael Posey. Pharmacotherapy: A Pathophysiologic Approach. 12 th edition (2023). McGraw⊠Hill/Appleton & Lange • Hutchison, LC et al. Fundamentals of Geriatric Pharmacotherapy: An Evidence Based Approach, ASHP, Bethesda MD, 2015 -Reuben DB, Herr KA, Pacala JT, eds At Geriatric At Your Fingertips. 2020, 22 ed. . New York: The American Geriatrics Society; 2020 • Hay WW et al. Current diagnosis and treatment: Pediatrics 25th edition Available at: https://accessmedicine.mhmedical.com/book.aspx?bookID=28 15 • Sandra Benavides, Pharm.D., and Milap C. Nahata, Pharm.D, FCCP, Lead Editors. Pediatric Pharmacotherapy. SBN: 978-1-932658-89-7; 2013; 908 pages
2	**Essential References Materials**	None
3	**Electronic Materials**	• Saudi digital library • https://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl • Access pharmacy: https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/ • Takeetomo CK et al. Pediatric Dosage Handbook, Lexi-comps clinical Reference, 16th Edition. Info Available at: http://webstore.lexi.com/pediatric-Dosage- Handbook Marcdante K et al. Nelson Essentials of Pediatrics. ISBN: 978-1- 4377-0643-7. Information available at: https://www.elsevier.com/books/nelson-essentials-of-pediatrics/marcdante/978-0-323-51145-2
4	**Other Learning Materials**	None

Pharmacotherapy of ambulatory care

Course Name: Pharmacotherapy of ambulatory care	صيدلة حيوية	إسم المقرر:
Course Code & No.: PHP 428	PHP 428	رقم المقرر ورمزه:
Credits: 2(2+0)	(2+0)2	عدد الساعات:
,Prerequisite: PHP361 PHP363, PHP 332 PHP 361	PHP361, PHP363, PHP 332	المتطلبات المسبقة:
Level: 7	7	المستوى:
Course type: Elective	إختياري	نوع الدورة:

1. Course Description

This course is formulated to provide the students with knowledge and skills regarding different aspects of pharmacy practice in ambulatory care settings. Students will be introduced to concepts such as comprehensive medication review, the pharmacist-patient care process model, collaborative practice agreements, and the prevention and management of chronic medical conditions commonly encountered in ambulatory care settings.

2. Course Main Objectives

To familiarize the students with the following:

- The role of ambulatory care clinical pharmacist.
- Different ambulatory care settings.
- There are different concepts such as medication management services (MMS), pharmaceutical care, medication therapy management (MTM), comprehensive medication management (CMM), and collaborative drug therapy management.
- Patient-centered care and pharmacist-patient care process.
- Pharmacotherapy of common disease states encountered in the ambulatory care setting, such as dyslipidemia, hypertension, diabetes, and anticoagulation.
- Medication safety in ambulatory care settings.
- Drug information in ambulatory care settings.

3. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods:

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge and Understanding**		
1.1	Recognize disease states, conditions and drugs that alter pharmacokinetics of a narrow therapeutic-index drugs such as (gentamicin, tobramycin, netilmicin, and amikacin, vancomycin, digoxin, lidocaine, procainamide, quinidine, carbamazepine, phenytoin, phenobarbital, valproic acid, cyclosporine, tacrolimus, theophylline, lithium) in a given patients.	TBL	MCQS, Case study, Short note
2.0	**Skills**		
2.1	Utilize population-based pharmacokinetic parameters to calculate an appropriate initial dosage regimen for a given patient.	TBL	MCQS, Case study, Short note
2.2	Utilize patient specific pharmacokinetic parameters to alter an existing dosage regimen.	TBL	MCQS, Case study, Short note
2.3	Use computational tools such as Pharmacokinetics program to calculate a dosage regimen for a given patient.	Kinetic for Windows software	Observation & Survey
3.0	**Values**		
3.1	Demonstrate ability to work as part of a team	TBL	Survey
3.2	Demonstrate ability to take responsibility towards self-learning.	TBL	MCQS, Case study, Short note, survey

4. Course Content

No	List of Topics	Contact Hours
1	Introduction to ambulatory care and ambulatory care pharmacy practice model	3.3
2	Ambulatory care pharmacy practice model and pharmacist patient care process.	3.3

No	List of Topics	Contact Hours
3	Medication safety in ambulatory care settings	3.3
4	Drug information in ambulatory care settings	3.3
5	Primary prevention of cardiovascular diseases	3.3
6	Hypertension and dyslipidemia management	3.3
7	Diabetes management in ambulatory care	3.3
8	Heart failure management in ambulatory care	3.3
9	Anticoagulation therapy in ambulatory care	3.3
	Total	**30**

5. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	**Lecture**	30
2	**Laboratory/Studio**	
3	**Tutorial**	NA
4	**Others (Learning hours)**	
	Total	30

6. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	**Oral presentations**	Weeks 5 to 15	15%
	Journal clubs	Weeks 5 to 15	15%
2	**Midterm exam**	10	20%
3	**Final exam**	20	50%

7. Learning Resources

1	**Required Textbooks**	• Whalen K, Hardin HC. eds. Medication Therapy Management: A Comprehensive Approach, 2e. McGraw Hill; 2018. Accessed January 11, 2023. • • Malone PM, Malone MJ, Park SK. eds. Drug Information: A Guide for Pharmacists, 6e. McGraw Hill; 2018. Accessed January 11, 2023. • • American Diabetes Association; Standards of Care in Diabetes—2023 Abridged for Primary Care Providers. Clin Diabetes 2022; cd23as01. https://doi.org/10.2337/cd23-as01 • 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease • • 2020 International Society of Hypertension Global Hypertension Practice Guidelines • • 2018 Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines • • Nemire RE, Kier KL, Assa-Eley M. eds. Pharmacy Student Survival Guide, 3e. McGraw Hill; 2014. • A selection of primary literature articles
2	**Essential References Materials**	• https://diabetesjournals.org/care/issue/46/Supplement_1 • • https://www.acc.org/guidelines • https://www.ahajournals.org/doi/10.1161/CIR.0000000000000678#:~:text=Adults%20should%20engage%20in%20at,achieving%20exercise%20recommendations%2C%20are%20crucial. • • https://www.ahajournals.org/doi/10.1161/CIR.0000000000000625
3	**Electronic Materials**	• Saudi digital library https://library-qu-edu-sa.ezproxy.qu.edu.sa/content/p/63/sdl • • Access pharmacy • https://accesspharmacy-mhmedical-com.sdl.idm.oclc.org/
4	**Other Learning Materials**	None

Appendices

Mapping of Pharm D graduate attributes with University graduate attributes

The college ensures that the program graduate attributes are consistent with the University graduate attributes as can be observed through the mapping below:

University graduate attributes						
3.1	2.3	2.2	2.1	1.1		
				✓	1.1	Pharm D graduate attributes
			✓		2.1	
		✓			2.2	
	✓				2.3	
✓					3.1	

Relationship between the University and Pharm D program attributes is described using the arrow (✓)

Mapping of Pharm D Program Learning Outcomes with General Learning Outcomes of the University

The college ensures that the program learning outcomes are consistent with the University learning outcomes as can be observed through the mapping below:

Qassim University Learning Outcomes									
3.1.2	3.1.1	2.3.2	2.3.1	2.2.2	2.2.1	2.1.1	1.1.2	1.1.1	Pharm D Program Learning Outcomes
								✓	K.1
								✓	K.2
								✓	K.3
								✓	K.4
					✓				S.1
						✓			S.2
				✓					S.3
					✓				S.4
			✓						S.5
					✓				S.6
					✓				S.7
						✓			S.8
					✓				S.9
	✓								V.1
✓									V.2
✓									V.3
	✓								V.4
✓									V.5
✓									V.6

Relationship between the University and Pharm D program attributes is described using the arrow (✓)

Mapping of Pharm D Program Learning Outcomes with Pharm D graduate attributes

Pharm D graduate attributes							
	3.1	2.3	2.2	2.1	1.1		
					✓	K.1	Pharm D Program Learning Outcomes
					✓	K.2	
					✓	K.3	
					✓	K.4	
			✓			S.1	
				✓		S.2	
		✓				S.3	
		✓				S.4	
		✓				S.5	
			✓			S.6	
			✓			S.7	
				✓		S.8	
			✓			S.9	
	✓					V.1	
	✓					V.2	
	✓					V.3	
	✓					V.4	
	✓					V.5	
	✓					V.6	

Relationship between the Pharm D program learning outcomes and attributes is described using the arrow (✓)

Mapping of Pharm D Program Learning Outcomes with National Qualification Framework (NQF)

The college ensures that the program learning outcomes are consistent with the National Qualification Framework which can be observed through the mapping below

المجال	رمز المخرج	الوصف المتعلق بالمخرج في الإطار الوطني للمؤهلات بحسب مستوى مؤهل البرنامج
المعرفة والفهم (1)	ع.1	بنية شاملة ومتسقة من المعارف والفهم للنظريات المتضمنة، والمبادئ والمفاهيم في واحد أو أكثر من مجالات التخصص أو العمل.
	ع.2	المعرفة والفهم المتقدّم للعمليات والمواد والأساليب والممارسات، والمسلّمات، و/ أو المصطلحات.
	ع.1، ع.3	المعرفة والفهم المتخصص المبني على التطورات الحديثة في مجال التخصص أو المهنة أو العمل.
	ع.4	معرفة منهجية البحث وفهمها، وأساليب الاستقصاء.
المهارات (2)	م.1	"المهارات الإدراكية: تطبيق المفاهيم والمبادئ والنظريات المتضمّنة لمعالجة القضايا و/أو المشكلات في مجموعة من السياقات المعقّدة.
	م.7	حل المشكلات المعقّدة وغير المتوقعة في مجال أو أكثر من التخصصات أو مجال العمل.
	م.3	التقويم النقدي للمعرفة المعقدة، وتوظيفها لتقديم حلول مبتكرة للقضايا والمشكلات المعاصرة في مجال أو أكثر من التخصصات أو مجال العمل أو المهنة.
	م.9	اقتراح وتطوير حلول مبتكرة للقضايا والمشكلات الحالية في مجال التخصص أو المهنة أو العمل.
	م.3	ممارسة أساليب للاستقصاء، والتحقّق والبحث في القضايا والمشكلا ت المعقّدة.
	م.4	المهارات العملية والبدنية: استخدام العمليات والأدوات والآلات والمواد والأجهزة المتقدمة والمتخصصة وتعديلها في التعامل مع أنشطة عملية مرتبطة بالتخصص والعمل والمهنة.

المجال	رمز المخرج	الوصف المتعلق بالمخرج في الإطار الوطني للمؤهلات بحسب مستوى مؤهل البرنامج
المهارات (2)	م.1، م.2، م.3، م.4، م.5، م.6، م.7	أداء مجموعة من المهام والإجراءات العملية المعقدة في مجال محدد، مرتبطة بمجال التخصص أو العمل المهنة
	م.8	مهارات التواصل، وتقنية المعلومات: التواصل بطرق مختلفة؛ لإظهار فهم المعرفة النظرية، ونقل المعرفة والمهارات المتخصصة والأفكار المعقدة لمجموعة متنوعة من الحضور
	م.5	تطبيق العمليات الحسابية؛ لحل المشكلات في السياقات المعقدة المتعلقة بمجال التخصص أو العمل أو المهنة.
	م.5	اختيار واستخدام مجموعة متنوعة من أدوات وتطبيقات التقنية الرقمية وتقنية المعلومات والاتصال؛ لمعالجة البيانات والمعلومات وتحليلها وإنتاجها؛ لدعم البحوث المتخصصة والمشاريع وتعزيزها.
القيم(3)	ق.5 ، ق.6	التمثّل بالنزاهة والأخاقيات المهنية والأكاديمية، والمشاركة في إيجاد الحلول البنّاءة لبعض القضايا المجتمعية، والالتزام بالمواطنة المسؤولة.
	ق.3	التقويم الذاتي لمستوى التعلم والأداء، والإصرار على الإنجاز والتميز، واتخاذ قرارات منطقية مدعومة بالأدلة والحجج باستقلالية.
	ق.1 ، ق.4	قيادة فرق العمل بمرونة وفعالية، وتحمّل مسؤولية التطوير المهني، والمشاركة في تطوير أداء المجموعة، وتعزيز جودة الحياة لديه.

Assessment Plan for Measurement of program Learning Outcomes)

The college ensures that the program learning outcomes are assessment using appropriate assessment methods and teaching strategies by mapping courses (assessment methods and teaching strategies used) with the program learning outcomes and sets a target performance to ensure its compliance

PLO domain	PLO code	Assessment method*	Teaching strategies **	Timing of assessment ***	Source of assessment****	Target performance*****
1-Knowledge and understanding	K.1	MCQ Shot notes (SN) TBL	Lectures Journal club TBL	2024-25	PHP427 PHP469 PHP433 PHP 483 PHP 471	70%
	K.2	MCQ SN Journal club	Lectures Journal club	2024-25	PHP492 PHP417 PHP433	70%
	K.3	MCQ SN TBL	Lectures TBL	2024-25	PHP466 PHP 417 PHP 467 PHP 483	70%
	K.4	MCQ SN Journal club	Lectures Journal club	2024-25	PHP434 PHP491 PHP433	70%
2-Skills	S1	MCQ, Cases Rubric Survey	Lectures Training	2022-23	PHP 483 PHP 471 Employer survey Graduate survey	75%
	S2	Rubric survey	Lectures Training	2022-23	PHP 483 Employer survey Graduate survey	75%

PLO domain	PLO code	Assessment method*	Teaching strategies **	Timing of assessment ***	Source of assessment****	Target performance*****
2-Skills	S.3	MCQ SN Cases Rubric Survey	Lectures Training	2022-23	PHP364 PHP467 PHP471 PHP427 Employer survey Graduate survey	75%
	S.4	**MCQ SN Presentation Rubric Survey**	**lecture Presentation Training**	**2022-23**	**PHG350 PHG241 PHP434 PHP483 Employer survey Graduate survey**	**75%**
	S.5	MCQ Cases TBL	Lectures TBL	2022-23	PHP 434 PHP 492 PHP 427	75%
	S.6	TBL MCQ, Cases	Lectures TBL	2023-24	PHP 441 PHP 467 PHP 424	75%
	S.7	MCQ SN Cases TBL	Lectures TBL	2023-24	PHP466 PHP427 PHP467 PHP469	75%
	S.8	MCQ SN Cases TBL	Lectures TBL	2023-24	PHP364 PHP466 PHP427 PHP434 PHP491 PHP467	75%
	S.9	MCQ SN Cases TBL	Lectures TBL	2023-24	PHP466 PHP427 PHP424 PHP469 PHP 483	75%

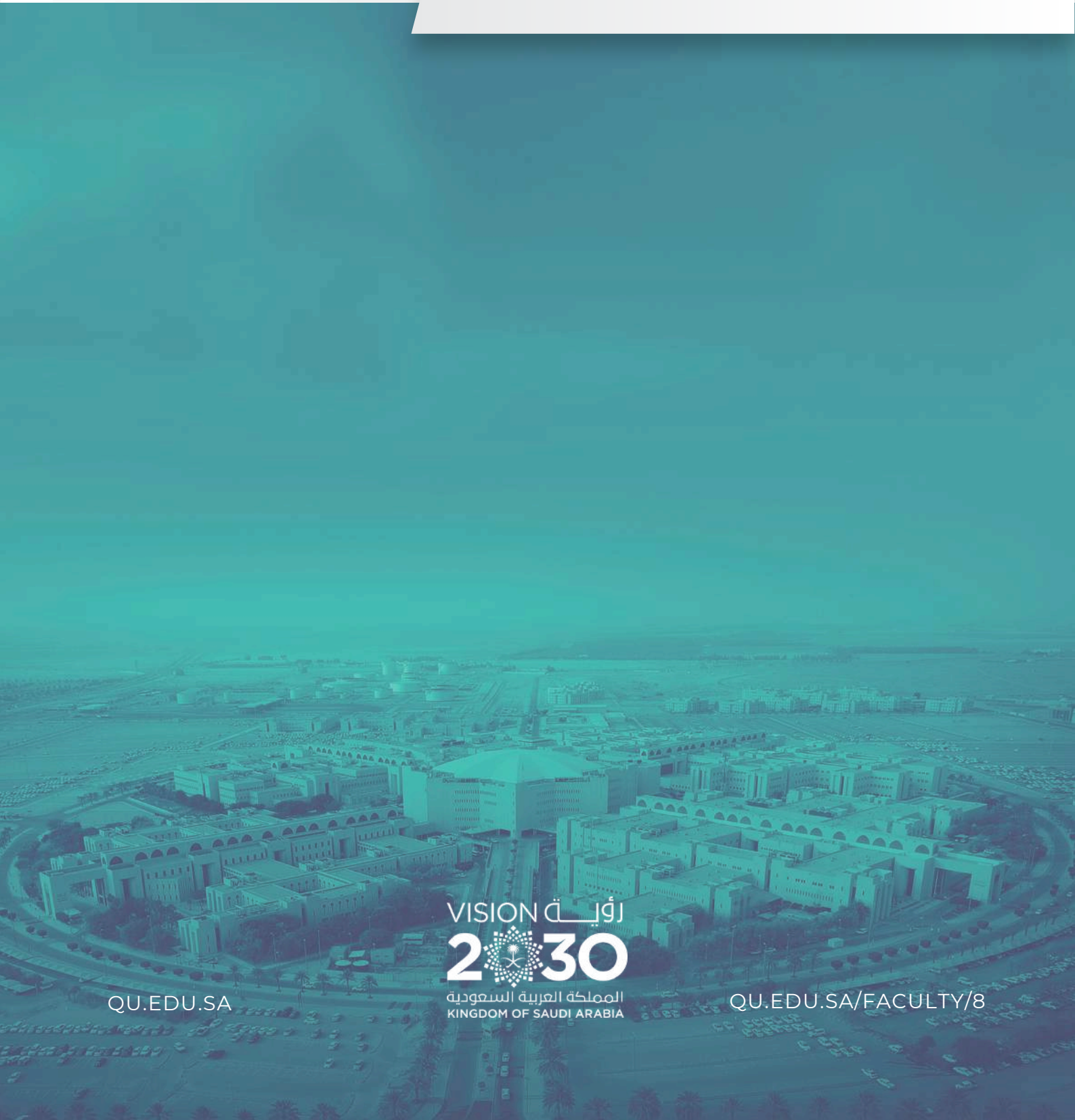
PLO domain	PLO code	Assessment method*	Teaching strategies **	Timing of assessment ***	Source of assessment****	Target performance****
3-Values	V1	MCQ SN Cases TBLSurvey	Lectures TBL	2025-26	PHP466 PHP427 PHP467 PHP424 PHP469	75% (70% for Survey)
	V2	MCQ SN Cases TBL	Lectures TBL	2025-26	PHP427 PHP469	75%
	V.3	MCQ SN TBL Journal club Survey	Lectures TBL Journal club	2025-26	PHP466 PHP427 PHP417 PHP433 PHP469	75% (70% for Survey)
	V.4	MCQ Rubric Survey	Lectures Training	2025-26	PHP 371 Employer survey Graduate survey	75% (70% for Survey)
	V.5	MCQ Rubric Survey	Lectures Training	2025-26	PHP 434 Employer survey Graduate survey	75% (70% for Survey)
	V.6	OSCE	Lectures Classroom discussion Practical	2025-26	PHP352 PHP319 PHP 483	75%

* The method of direct assessment (tests of all kinds, observations, evaluation in interviews, evaluation of performance according to rubrics, ... etc.), and indirect (opinion polls such as questionnaires, interviews and focus groups for graduate students, faculty members or employers, ... etc.). Assessment methods should be consistent with what is stipulated in the course descriptions related to the learning outcome (specifically in section (d) of each description).

** The teaching strategies stipulated in the course descriptions related to the learning outcome (specifically in section (d) of each description) and the use of classroom and extra-curricular activities should be adopted.
**** Several tools must be used to measure each learning outcome, two or three methods as a maximum, and it is not sufficient to measure one method or one source for the learning outcome.
***** The target performance is determined according to the actual performance of the students during the preparation of this plan in the previous years, as well as the performance of the students in the standardized tests, and the opinions of the professional advisory committee.
The discrepancy between male and female students in academic performance is defined as a 15% difference between male and female students in achieving the program learning outcomes.

Qassim University
جامعة القصيم

كلية الصيدلة



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