



Princess Nourah bint
Abdulrahman University
College of Pharmacy

DOCTOR OF PHARMACY

PharmD

PROGRAM CATALOGUE



مهنتكم عظيمة وحيثيتكم كالدواء

كلية الصيدلة
Faculty of Pharmacy



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About the College

The College of Pharmacy was the first health college established at Princess Nourah bint Abdulrahman University, being founded in 2007. It accepted its first students in the academic year 1429–1430 H (September 2009), Since then, the college was dedicated to graduate qualified pharmacists who are able to compete locally and internationally in accordance with the highest scientific and professional standards, so they can contribute in serving the society.

The college includes two academic departments, Pharmaceutical Sciences Department and Pharmacy Practice Department, who contribute to enriching the Doctor of Pharmacy program by teaching basic and specialized courses.

College Vision

To be a pioneer in pharmacy education and research to improve healthcare practice in Saudi Arabia and the world.

College Mission

To develop distinguished pharmacists who lead the profession and improve the health of the community.

College Goals

1. Deliver excellence in pharmacy education
2. Provide academic programs that serve market needs
3. Foster an environment for conducting cutting edge research
4. Build a sustainable revenue strategy
5. Advance the profession of pharmacy to positively impact public health

About the Program

Program Mission

To prepare competent pharmacists capable of providing high quality pharmaceutical services and striving for excellence and innovation in patient care, research and community wellness.”

Program Goals and objectives

1. **Excellence in pharmacy education and community wellness**



- Apply scientific knowledge in pharmaceutical practice to provide optimum patient care
 - Demonstrate proficiency in medication management to improve health outcomes of individuals and community
- 2. Distinction in leadership skills and pharmaceutical research**
- Apply fundamental principles and skills in conducting pharmaceutical research
 - Demonstrate effective communication and collaboration in various professional settings.
 - Practice life-long learning and demonstrate self-awareness to enhance themselves and their profession

Degree Offered

Doctor of Pharmacy Degree (PharmD)

Total Credit Hours for Completing the Program

210 credit hours

Education System

The educational system is annual. Each year consists of 2 semesters each is about 15 weeks long. During the five educational years and after the completion of level 7, students start their experiential training followed by additional training after level 8 and after level 10. Students start their experiential internship year in the 6th year after completing all the specialization and University required courses. Students will be trained during their internship in various practice setting focusing on clinical training in hospital wards and health care clinics.

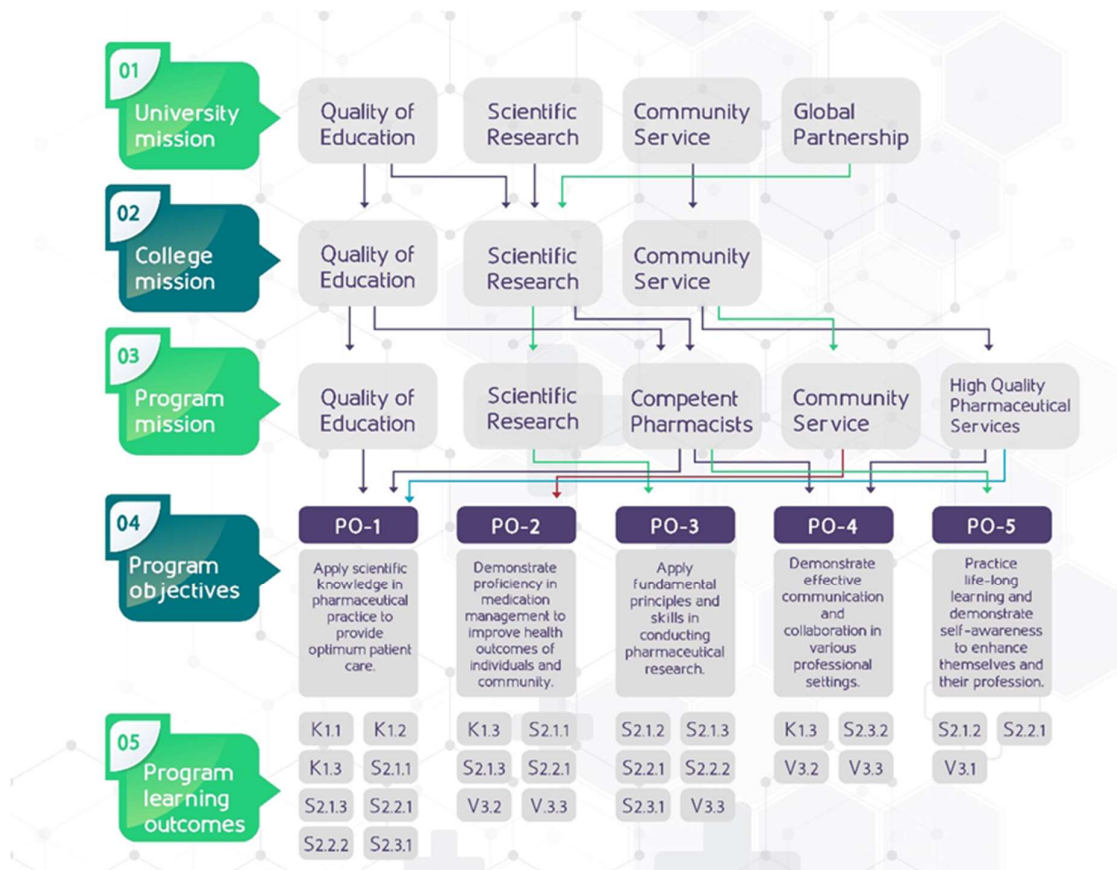
Professional Occupations/Jobs

Students will be eligible to apply for pharmacist license through Saudi Commission for healthcare specialization SCFHCS. Once licensed, they can work in any of the following:

1. Pharmacist in the hospitals and health care clinics in the private or governmental sectors
2. Ministry of health at pharmaceutical services sectors.
3. Academic in colleges and universities
4. Research Centers
5. Saudi food and drug authority
6. Drug information and toxicology centers
7. Pharmaceutical manufacturing companies
8. Pharmaceutical companies
9. Community Pharmacies



Relationship between Program Mission and Goals and the Mission and Goals of the Institution/College





Program learning Outcomes

1. Knowledge and Understanding	
K1 (1.1)	Describe essential knowledge related to the development and use of medications, natural remedies, and other therapies for disease/s prevention and treatment.
K2 (1.2)	Describe the concepts and principles related to various pharmacy practice settings
K3 (1.3)	Recognize the role of pharmacist according to legal, ethical and professional standards in promoting health and the prevention and treatment of disease/s.
2. Skills	
2.1. Cognitive skills	
S1 (2.1.1)	Integrate pharmaceutical sciences with pharmacy applications.
S2 (2.1.2)	Appraise scientific literature to be utilized in evidence-based practice, conducting research and problem solving.
S3 (2.1.3)	Interpret information obtained from different resources to provide creative solutions for complex problems.
2.2. Practical and Physical Skills	
S4 (2.2.1)	Perform various clinical assessments and medication use procedures effectively.
S5 (2.2.2)	Apply effective pharmaceutical laboratory skills.
2.3. Communication and ICT Skills	
S6 (2.3.1)	Communicate clearly and collaborate effectively within a team in various settings.
S7 (2.3.2)	Utilize appropriate information technologies, pharmaceutical calculation and analyses to optimize medication use and patient care.
3. Values, Autonomy and Responsibility	
V1 (3.1)	Demonstrate leadership skills, entrepreneurship, self-awareness, accountability and acceptance of responsibility, reflective and independent thinking to effectively manage and respond to routine or unanticipated circumstances.
V2 (3.2)	Contribute to decision-making processes by providing proper recommendations in various settings.
V3 (3.3)	Demonstrate empathy, professional attitude, ethical behavior, social and cultural awareness to provide safe and effective patient care.



Curriculum Structure

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	6	12	5.71%
	Elective	-	-	
Health colleges Requirements	Required	10	28	13.33%
	Elective	-	-	-
College Requirements	Required	15	43	20.5%
	Elective	1 course out of 3	3	1.43%
Program Requirements	Required	36	85	40.5%
	Elective	1 course out of 5	3	1.43%
Capstone Course/Project	NA	NA	NA	NA
Field Experience/ Internship	Required	9 rotations	36	17.1%
Total		78 Courses	210 Credit hours	100%

Program Study Plan

Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, Health Colleges or Program)	
Level 1	ENG 131	Academic English for Health Specialties (1)	Required	-	3	Health Colleges	
	BIO 105	Human Biology for Health Specialties	Required	-	3	Health Colleges	
	MATH 162	Statistics for Health Specialties	Required	-	3	Health Colleges	
	CHEM 104	General Chemistry for Health Specialties	Required	-	3	Health Colleges	
	HRS 118	Medical Terminology	Required	-	2	Health Colleges	
			University Mandatory (1)	Required	-	2	Institution
Level 2	ENG 132	Academic English for Health Specialties (2)	Required	ENG 131	3	Health Colleges	
	PHYS 105	General Physics for Health Specialties	Required	-	3	Health Colleges	
	MME 110	Health Profession Skills	Required	-	3	Health Colleges	
	BDS 100	Introduction to Health Professions and Ethics	Required	-	2	Health Colleges	
	CPP 100	Fundamentals of Scientific Research	Required	-	3	Health Colleges	
			University Mandatory (2)	Required	-	2	Institution
			University Elective (1)	Required	-	2	Institution



Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, Health Colleges or Program)
Level 3		University Elective (2)	Required	-	2	Institution
		University Elective (3)	Required	-	2	Institution
	PHS 200	Pharmaceutical Organic Chemistry	Required	-	4	College
	MBS 210	Anatomy & Histology	Required	Co-MBS 211	2	College
	MBS 211	Physiology	Required	Co- MBS 210	3	College
	MBS 212	Genetics/Genomics	Required	-	2	College
	PHS 220	Pharmacy Calculations	Required	MATH 162	2	College
Level 4		University Elective (4)	Required	-	2	Institution
	MBS 216	General Immunology	Required	-	2	College
	PHS 201	Pharmaceutical Analytical Chemistry	Required	-	4	College
	MBS 215	Introduction to Medical Microbiology	Required	Co-MBS 216	4	College
	PHS 221	Basic Principles of Industrial Pharmacy	Required	PHS 220	2	College
	MBS 213	Pathophysiology (1)	Required	MBS 210, MBS 211	2	Department
	CPP 200	Introduction to Pharmacy Practice and Health Care Systems	Required	-	2	College
Level 5	PHS 310	Basic Principles in Pharmacology	Required	Co-MBS 214 Co- CPP 310	3	Department
	PHS 302	Pharmaceutical Biochemistry	Required	PHS 200	4	College
	MBS 214	Pathophysiology (2)	Required	MBS 213	3	Department
	PHS 303	Medicinal chemistry and drug design	Required	PHS 200 Co- PHS 302 Co- PHS 310	2	College
	PHS 322	Pharmaceutical Dosage Forms and Stability	Required	PHS 221	4	College
	CPP 310	Patient Care Laboratory	Required	Co-PHS 310	2	Department
Level 6	CPP 301	Professional Communication Skills	Required	-	2	Department
	PHS 304	Principles of Natural Products & Evidence-Based Medicine	Required	-	3	Department
	PHS 323	Biopharmaceutics and Pharmacokinetics	Required	PHS 220 PHS 322 PHS 310	4	College
	CPP 302	Principles of Pharmacy Regulations & Health Ethics	Required	-	2	Department
	CPP 320	Integrated Pharmacotherapy (1)	Required	PHS 310 PHS 303 Co- CPP 311	3	Department
	CPP 311	Integrated Patient Care Laboratory (1)	Required	PHS 310 Co-CPP 320	2	Department



Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, Health Colleges or Program)
				Co- PHS 304		
	CPP 303	Biostatistics	Required	MATH 162	2	College
Level 7	CPP 404	Principles of Self-Care & Medication Therapy Management	Required	-	2	Department
	CPP 405	Drug Information & Literature Evaluation	Required	CPP 303	3	Department
	CPP 408	Principles of Pharmacoepidemiology & Pharmacoeconomics of Medicine	Required	CPP 303	3	Department
	CPP 321	Integrated Pharmacotherapy (2)	Required	CPP 320 Co-CPP 312	3	Department
	CPP 312	Integrated Patient Care Laboratory (2)	Required	CPP 311 Co-CPP 321 Co-CPP 404 Co-CPP 405	2	Department
	CPP 430	Pharmacy Practice Experience (1) (Community Practice)	Required	-	2	Department
	PHS 411	Toxicology	Required	PHS 310	2	Department
Level 8	CPP 407	Principles of Evidence-Based Practice	Required	CPP 405	2	Department
	CPP 406	Principles of Pharmacy Management and Marketing	Required	-	2	Department
	CPP 409	Principles of Medication Safety	Required	-	2	Department
	CPP 422	Integrated Pharmacotherapy (3)	Required	CPP 321 Co-CPP 423 Co-CPP 413	3	Department
	CPP 423	Integrated Pharmacotherapy (4)	Required	CPP 321 Co-CPP 422 Co-CPP 413	3	Department
	CPP 413	Integrated Patient Care Laboratory (3)	Required	CPP 312 Co-CPP 422 Co-CPP 423 Co-CPP 407	2	Department
	CPP 431	Pharmacy Practice Experience (2) (Hospital Practice)	Required	-	2	Department
Level 9	PHS 524	Compounding & IV Admixture Services	Required	PHS 220	3	Department
	CPP 424	Integrated Pharmacotherapy (5)	Required	CPP 422 CPP 423 Co- CPP 525 Co-CPP 414	4	Department
	CPP 525	Integrated Pharmacotherapy (6)	Required	CPP 422 CPP 423 Co- CPP 424 Co-CPP 414	4	Department
	CPP 414	Integrated Patient Care Laboratory (4)	Required	CPP 413 Co- CPP 424 Co-CPP 525	2	Department



Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, Health Colleges or Program)
	CPP 500	Health Informatics	Required	-	2	Department
	PHS 525 526 527	College Elective	Elective	PHS 322 PHS 323 PHS 220	3	College
Level 10	CPP 526	Integrated Pharmacotherapy (7)	Required	CPP 424 CPP 525 Co- CPP 527 Co-CPP 515	4	Department
	CPP 527	Integrated Pharmacotherapy (8)	Required	CPP 424 CPP 525 Co- CPP 526 Co-CPP 515	4	Department
	CPP 515	Integrated Patient Care Laboratory (5)	Required	CPP 414 Co- CPP 526 Co- CPP 527	2	Department
	CPP 532	Pharmacy Practice Experience (3) (Introduction to Clinical Practice)	Required	-	2	Department
	CPP 501	Research Project	Required	CPP 303 CPP 405 CPP 407	3	Department
	CPP 528 529 520 521 522	Department Elective	Elective	-	3	Department
Internship Level 11 & 12	CPP 590	Advanced Pharmacy Practice Experience (1) (Primary/ Ambulatory Care)	Required	Pass all courses from Level 1 to Level 10	4	Department
	CPP 591	Advanced Pharmacy Practice Experience (2) (General Internal Medicine)	Required	Pass all courses from Level 1 to Level 10	4	Department
	CPP 592	Advanced Pharmacy Practice Experience (3) (General Internal Medicine Specialty)	Required	Pass all courses from Level 1 to Level 10	4	Department
	CPP 593	Advanced Pharmacy Practice Experience (4) (Community Practice)	Required	Pass all courses from Level 1 to Level 10	4	Department
	CPP 594	Advanced Pharmacy Practice Experience (5) (Hospital Practice)	Required	Pass all courses from Level 1 to Level 10	4	Department
	CPP 595	Advanced Pharmacy Practice Experience (6)	Required	Pass all courses from Level 1 to Level 10	4	Department
	CPP 596	Advanced Pharmacy Practice Experience (7)	Required	Pass all courses from	4	Department



Level	Course Code	Course Title	Required or Elective	Pre-Requisite Courses	Credit Hours	Type of requirements (Institution, Health Colleges or Program)
				Level 1 to Level 10		
	CPP 597	Advanced Pharmacy Practice Experience (8)	Required	Pass all courses from Level 1 to Level 10	4	Department
	CPP 598	Advanced Pharmacy Practice Experience (9)	Required	Pass all courses from Level 1 to Level 10	4	Department



Program learning Outcomes Mapping Matrix

Alignment of the program learning outcomes with program courses, according to desired levels of performance (I = Introduced P = Practiced M = Mastered)

Course code & No.	Program Learning Outcomes												
	Knowledge and understanding			Skills						Values			
				2.1. Cognition			2.2. Psychomotor		2.3. Communication and informational technology				
	K1 (1.1)	K2 (1.2)	K3 (1.3)	S1 (2.1.1)	S2 (2.1.2)	S3 (2.1.3)	S3 (2.2.1)	S4 (2.2.2)	S5 (2.3.1)	S6 (2.3.2)	V1 (3.1)	V2 (3.2)	V3 (3.3)
ENG 131									I				
BIO 105	I					I		I	I				I
Math 162	I					I			I	I			
CHEM 104	I							I	I	I			I
HRS 118	I												
GNR*									I	I	I		
ENG 132									I				
PHYS 105													I
MME 110		I			I	I			I	I	I		
BDS 100	I						I		I				I
CPP 100		I			I	I			I	I	I		
GNR*									I	I	I		
GNR*									I	I	I		
PHS 200	I			I				I	P	I	I		I
MBS 210	P			I					P	I			
MBS 211	I	I							P	I			
MBS 212	P	I							P	I			
PHS 220		I				I			P	I			
GNR*									P	P	P		
GNR*									P	P	P		
PHS 201	I	I		I		I		P	P	P	P		P
PHS 221	I	I		I					P	P	P		
MBS 215	I					I		I	P	I	P		P
MBS 213	I	I		I					P	I			
CPP 200	I	I	I						P		I		
MBS 216	I	I		I					P	I			
GNR*									P	P	P		
PHS 310	I			I					P	I			
PHS 302	I			I					P	I	P		
MBS 214	P			P					P	P			
PHS 303	I	I		I					P	P		I	
PHS 322	I	I		I				I	P	I		I	
CPP 310	I			I		I	I		P	P	P	I	P
CPP 303		P			P	P			P	P	P		
CPP 301		P	I			P			P		P		P
PHS 304	I			I	P	P			P	P		P	
CPP 323		I				P			P	P	P		



Course code & No.	Program Learning Outcomes												
	Knowledge and understanding			Skills								Values	
				2.1. Cognition			2.2. Psychomotor		2.3. Communication and informational technology				
	K1 (1.1)	K2 (1.2)	K3 (1.3)	S1 (2.1.1)	S2 (2.1.2)	S3 (2.1.3)	S3 (2.2.1)	S4 (2.2.2)	S5 (2.3.1)	S6 (2.3.2)	V1 (3.1)	V2 (3.2)	V3 (3.3)
CPP 302	P		P						P		P	I	P
CPP 320	P		P	P		P			P	P	P		P
CPP 311		P	P		P	P	P		P	P	P		P
CPP 404	P			P		P			P	P	P		P
CPP 405	P	P			P	P			P	P	P	P	
CPP 408	P	P			P	P			P	P	P	P	
CPP 421	P	P	P	P		P			P	P	P		P
CPP 312	P	P			P	P	P		P	P	P	P	P
CPP 430	P	P	P	P		P	P		P	P	P	P	P
PHS 411	P	P	P	P		P			P	P		P	
CPP 406	P	P		P	P	P			M	P	P	P	
CPP 409	P	P	P	P		P			M	M	P		P
CPP 407		P			P	M			M	M	M	M	
CPP 422	P		P	P		M			M	M	M		M
CPP 423	P		P	P		M			M	M	M		M
CPP 413		P	P		P	M	M		M	M	M	M	M
CPP 431	P	P	P	P	P	M		P	M	M	M	M	M
PHS 524		P		P					M	M		M	
CPP 524	M		M	M	M	M			M	M	M	M	M
CPP 525	M		M	M	M	M			M	M	M	M	M
CPP 500	M	M				M			M	M	M	M	
CPP 414		M	M	M	M	M	M		M	M	M	M	M
PHS 525													
PHS 526		M		M		M			M	M	M		
PHS 527		M				M			M	M	M		
CPP 526	M		M	M	M	M			M	M	M	M	M
CPP 527	M		M	M	M	M			M	M	M	M	M
CPP 515		M	M		M	M	M		M	M	M	M	M
CPP 532	M	M	M	M		M			M	M	M	M	M
CPP 501	M	M	M	M	M	M		M	M	M	M	M	M
CPP 528		M	M		M	M			M	M	M	M	
CPP 529		M	M		M	M			M	M	M	M	
CPP 520	M		M		M	M			M	M	M	M	
CPP 521	M		M		M	M			M	M	M	M	
CPP 522	M		M		M	M			M	M	M	M	
CPP 590	M	M	M	M	M	M	M	M	M	M	M	M	M
CPP 591	M	M	M	M	M	M	M	M	M	M	M	M	M
CPP 592	M	M	M	M	M	M	M	M	M	M	M	M	M
CPP 593	M	M	M	M	M	M	M	M	M	M	M	M	M
CPP 594	M	M	M	M	M	M	M	M	M	M	M	M	M
CPP 595	M	M	M	M	M	M	M	M	M	M	M	M	M



Course code & No.	Program Learning Outcomes												
	Knowledge and understanding			Skills						Values			
				2.1. Cognition			2.2. Psychomotor		2.3. Communication and informational technology				
	K1 (1.1)	K2 (1.2)	K3 (1.3)	S1 (2.1.1)	S2 (2.1.2)	S3 (2.1.3)	S3 (2.2.1)	S4 (2.2.2)	S5 (2.3.1)	S6 (2.3.2)	V1 (3.1)	V2 (3.2)	V3 (3.3)
CPP 596	M	M	M	M	M	M	M	M	M	M	M	M	M
CPP 597	M	M	M	M	M	M	M	M	M	M	M	M	M
CPP 598	M	M	M	M	M	M	M	M	M	M	M	M	M

* Institution required courses (The student choose from different available courses)

Teaching and learning strategies to achieve program learning outcomes

NQF Learning Domains and Learning Outcomes		Teaching strategies	Assessment Methods
1. Knowledge and Understanding			
K1 (1.1)	Describe essential knowledge related to the development and use of medications, natural remedies, and other therapies for disease/s prevention and treatment.	Lecture Small group discussions Pre-readings Laboratory sessions Flipped learning Essay writing Oral presentation	Exams (Quizzes, mid and final exams, IRAT/TRAT) Activity Assessment Rubrics
K2 (1.2)	Describe the concepts and principles related to various pharmacy practice settings		
K3 (1.3)	Recognize the role of pharmacist according to legal, ethical and professional standards in promoting health and the prevention and treatment of disease/s.		
2. Skills			
2.1. Cognitive skills			
S1 (2.1.1)	Integrate pharmaceutical sciences with pharmacy applications.	Lecture Small group discussions Case study Literature evaluation Journal club Field training Conducting research Self-directed learning Brainstorming and critical thinking Problem based learning Simulation	Exams (Quizzes, mid and final exams, IRAT/TRAT) Activity Assessment Rubrics
S2 (2.1.2)	Appraise scientific literature to be utilized in evidence-based practice, conducting research and problem solving.		
S3 (2.1.3)	Interpret information obtained from different resources to provide creative solutions for complex problems.		
2.2. Practical and Physical Skills			
S4 (2.2.1)	Perform various clinical assessments and	Laboratory Demonstration Workshops	OSCE



	medication use procedures effectively.	Simulation Role playing Shadowing Hands-on learning Team-based learning Simulation	Laboratory assessment rubrics
S5 (2.2.2)	Apply effective pharmaceutical laboratory skills.		
2.3. Communication and ICT skills			
S6 (2.3.1)	Communicate clearly and collaborate effectively within a team in various settings.	Small group discussions Team-based learning Role playing Tutorials Field training	Exams (Quizzes, mid and final exams, IRAT/TRAT)
S7 (2.3.2)	Utilize appropriate information technologies, pharmaceutical calculation and analyses to optimize medication use and patient care.	Case study Oral presentation Problem solving Awareness campaign Brainstorming and critical thinking Simulation	Activity Assessment Rubrics Observation of the student by the preceptor/pharmacist.
3. Values, Autonomy and Responsibility			
V1 (3.1)	Demonstrate leadership skills, entrepreneurship, self-awareness, accountability and acceptance of responsibility, reflective and independent thinking to effectively manage and respond to routine or unanticipated circumstances.	Small group discussions Team-based learning Case study Problem based learning Field training	Activity Assessment Rubrics
V2 (3.2)	Contribute to decision-making processes by providing proper recommendations in various settings.	Role playing Debating Simulation Awareness campaign	Observation of the student by the preceptor/pharmacist.
V3 (3.3)	Demonstrate empathy, professional attitude, ethical behavior, social and cultural awareness to provide safe and effective patient care.		



Program admission requirements

Admission to foundation year

Students are accepted for the foundation year for health colleges according to following requirement :

- 1.Student's composite grade (30% high school, 30% general aptitude test and 40% Achievement test).
- 2.Medical check-up

Requirements for specialization of foundation year students to PharmD program

- 1.Passing all foundation year courses within four semesters, starting from the admission date and counting dropping semesters.
- 2.GPA should not be less than 3 out of 5.
- 3.Availability of seats in the college.

The Program provides comprehensive orientation for new students, ensuring their full understanding of the types of services and facilities available to them. This is achieved by conducting an orientation day for students in the first week of study in addition of providing the students with the student's manual that is specific for the program. In this event the students are provided with a comprehensive information about rules, regulations, responsibilities, and services provided by the College and the University.

Student Counseling Services

(academic, career, psychological and social)

Academic Advising

All students who are enrolled in the College of Pharmacy are assigned by the academic advising unit to a dedicated academic advisor to follow their academic performance until graduation and ensure that they are supported whenever needed. The support includes assistance in course registration, guidance on academic policies and procedures, and follow up to resolve any problem the student is facing throughout her academic years. Each student is assigned an advisor that is linked in the "banner" system where they can both easily connect electronically .

The students are introduced to this service and to their assigned advisor in the first "New Students' Introductory Program". Throughout the semester students are periodically exposed to activities and Awareness Campaigns to remind them and update them on crucial information for their smooth academic progress, which includes coursework expectations, academic prerequisites and learning and study skills .

The academic advising unit aims at identifying students with difficulties and direct them to their advisors and they continue to be closely followed up by the Committee for Poor Academic Performance.

The following strategy is followed to facilitate the process of academic advising:

- 1 .Each faculty member is an advisor for about 10-15 students till their graduation.
- 2 .The advisors are available in the drop/add week to assist the students in their courses' selection.
- 3 .Each advisor has allocated time in their weekly schedule to meet their students.
- 4 .A group leader is selected from each study level to increase the link between the unit and students in each level.



- 5 .After the first midterm, faculty members leave a copy of their grades with the head of the department and students with low performance are directed to their advisors for follow up. Throughout the semester the instructors can also flag any students that appears to have any struggle to be directed to the special support needed by informing the academic advising unit.
- 6 .The students meet twice per year with their advisors to discuss any difficulties or pass new rules.
- 7 .The advisor receives concerns or inquiries from the students, and they report it or work on resolving them with the academic advising unit
- 8 .The unit keep records of all the meeting and any action taken.

Psychological, social and counseling support

A special psychological and social worker is working in students' services administration. The psychologist is with adequate BSc qualification, and all the services provided by her are assigned by the deanship of student services.

Students are provided with the needs and support from the university whether it is in the form of financial aid and loans or assessment and recommendation for students with disabilities. Student service administration assure the support of services in all aspects such as academic, administrative, psychological, social. The services include assistance through educational sessions, document support, and academic and administrative assistance

Career counselling

The university provide career counselling service through 'Namaa Center', which is specialized in providing support and career guidance. The College as well has faculty members who had been certified as career advisors where they provide individual session to college students by scheduled appointments.

Special Support

(low achievers, disabled, gifted and talented)

A dedicated committee for underachieving students is established and works in alignment with the Academic Advising services. Students that are identified from the unit to have failed courses, academic struggles, warning, or who have almost exceeded the allowed duration until graduation are directed to this committee which works closely with their advisors to find out solutions for their problems. The committee members have assigned students that they meet regularly and work closely with to ensure their smooth graduation after seeking solutions in coordination with key offices in the colleges.

A specialist is available for the psychological and social support of the students in a confidential manner. Issues of students with needs are processed so that the University provides them with support whether it is in the form of financial aid and loans, or provision of appropriate support for disabilities based on assessments and recommendations from the college students' affairs.

The College of Pharmacy has a Dean's List Committee which recognizes students with high academic achievement who had been involved in different scientific conferences and community services throughout the academic year.



Program Regulations

Admission and transfer

<https://www.pnu.edu.sa/en/Deanship/Registration/Pages/AdmissionGuide.aspx>

Students are accepted for the foundation year for health colleges according to following requirement :

- 1 .Student's composite grade (30% high school, 30% general aptitude test and 40% Achievement test)
2. Medical check-up

After passing the foundation year, the students get accepted to the program according to their cumulative GPA during the foundation year .Students with GPA less than 3 out of 5 cannot access the program.

Transfer between Health Colleges Programs

<https://www.pnu.edu.sa/en/Deanship/Registration/Continuous/Pages/Change.aspx#content>

- 1 .Student should have completed two successive semesters in her current major.
- 2 .Student should have completed all the courses in her first year (dropping any course cancels transferring) .
- 3.Choosing the candidates based on availability of seats and a GPA of 4.75
- 4 .Passing the interview for the College of Pharmacy

Study and Exams

Program study regulations:

1 .Attendance: students should secure a minimum of 75% attendance of the total number of classes during the semester. If the attendance is less than 75% then student will be excluded from attending the final exam. The student receives a first warning when she passes 10% absence from the lectures and a second warning at 20% absence .

2 .Academic warning: a student with a term GPA below 2.0 is given an academic warning. 3.

Suspension from university: there are 2 situations where students can be suspended from university:

- First, student who has three academic warnings .
- Second, if the student did not complete the college requirements in 9 years (6 years of college + 3 extra years)

4 .Program completion or graduation requirements :

a. Successful completion of 210 credit hours within the PharmD curriculum

b. Progression from year to year:

•Completion of first year: If a student has failed in any course at the first-year levels, they will be required to re-sit the course before they can progress to the second year .

•Prerequisites: Students enrolling in a course with a prerequisite must complete the prerequisite before they can register for the course .

•Internship: Student cannot register in any of the advanced pharmacy practice experience courses unless they successfully complete all courses from level 1 to level 10.

Exam regulations and standards:

Different processes are adopted to regulate student exams and guarantee objectivity and fairness of evaluation:

- 1 .All exams are peer reviewed and a standard checklist is used to ensure that different elements of the college adopted exams guideline are applied .



- 2 .Processing of exam is regulated by a dedicated committee to ensure that all final samples and keys are archived for reference when needed as well as student records of test-takers and assigned invigilator in every exam .
- 3 .Instructors have a peer randomly double check the marking of tests and assignment to ensure the objectivity of the marking .
- 4 .Some assignments and projects are scored by a faculty team to ensure objectivity .
- 5 .Students are allowed to see the exam (Except finals) to personally double check and review their scores .
- 6 .All exams statistics are performed and submitted to the college exams and assessment committee with instructors' comments when needed to look for abnormal trends in the students' scores.

Appeals and complaint regulations

<https://www.pnu.edu.sa/en/faculties/pharmacy/pages/studentguide.aspx>

There are procedures for students to appeal against disciplinary actions or academic decisions . The student would raise any concern directly to the vice-dean for academic affairs as the chairman of the student right's committee in which an attempt is made to resolve any issues informally . However, there is a formal complaints and appeals procedure in confidential settings that ensure fairness. where the student may submit her appeal to the student right's committee in the college not more than 30 days of the incidence by filling a special form and she should receive a feedback about her complaints within 30 days.

If the complaint is about an academic decision the student should fill another form and the committee will submit it to the examination committee.



Courses Description

Level 3

1- Anatomy and Histology

Course Title	Anatomy and Histology			التشريح وعلم الأنسجة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	MBS	210	2	2	-	-
Level/year	3 rd Level / 2 nd Year					
Prerequisites	-					
Co-requisites	MBS 211					

Course Description:

The course is to learn the structure and organization of the systems of the human body. Starting with introduction, organization of the body then proceed through learning the gross and microanatomy (histology) of all the body systems: (skin, musculoskeletal, nervous, cardiovascular, renal, respiratory, digestive, endocrine and genitourinary).

Topics:

No	List of Topics
1	Organization of the body, cells, tissues and organs
2	Skin and Subcutaneous Tissues (gross and microscopic structure)
3	Skeletal System, Joints Articulations
4	Muscular system
5	Exam 1
	Nervous system
6	Anatomy of the Central Nervous System
7	Anatomy of the peripheral Nervous System
8	The special senses: Vision, Hearing, Touch, Smell
9	Cardiovascular system: Heart (internal and external features, electrical system, blood supply)
	Exam 2
10	Vascular (arterial and venous) and lymphatic system: (Lymph Tissue and Vessels)
11	Respiratory System
12	Urinary system
13	Digestive System
14	The Endocrine System (pituitary, thyroid and parathyroid, adrenal, pancreas)
15	The Reproductive System
16	Final Exam



2- Pharmacy Calculations

Course Title	Pharmacy Calculations			الحسابات الصيدلانية																																		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours																																		
				LT	LB	TR																																
	PHS	220	2	1	2	-																																
Level/year	3 rd Level / 2 nd Year																																					
Prerequisites	-																																					
Co-requisites	-																																					
Course Description:																																						
Pharmaceutical Calculations course describes: Applying basic principles of mathematics to the preparation of safe and effective pharmaceutical products																																						
Topics:																																						
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3- Pharmaceutical Organic Chemistry

Course Title	Pharmaceutical Organic Chemistry			الكيمياء العضوية الصيدلانية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
	LT	LB	TR			
	PHS	200	4	3	2	-
Level/year	3 rd Level / 2 nd Year					
Prerequisites	-					
Co-requisites	-					
Course Description:						
<p>The course includes reviewing of different functional groups including dicarbonyl compounds and define aromaticity of organic compounds and the types and nomenclature of heterocyclic compounds, their classification, nomenclature and reactions.</p>						
Topics:						
No	List of Topics					
1-2	Review of fundamental organic functional groups (alkane, alkene, alkynes, alkyl halides, alcohols, thiols, ethers, aldehyde, ketones, carboxylic acids, and amines,) <ul style="list-style-type: none">• Properties• Nomenclature• Reactions					
3-4	Organic reaction mechanisms <ul style="list-style-type: none">• Nucleophilic substitution• Nucleophilic addition• Electrophilic substitution• Electrophilic addition• Elimination reactions• Free radical reactions)• Reactions used in synthesis					
5	Conjugated Unsaturated Systems <ul style="list-style-type: none">• Introduction• Features of conjugations• Types of conjugation• Stability of conjugated unsaturated systems• Examples of conjugations• Reactions of conjugated unsaturated systems					
6	Substitution and condensation reactions of dicarbonyl compounds <ul style="list-style-type: none">• Introduction to substitution reactions• The stability of enol and keto forms					



	<ul style="list-style-type: none">• Reactions via Enols and Enolates• Alkylation of ketone by LDA• Enolate of β-dicarbonyl compounds (ethyl acetoacetate) Enolate of β -dicarbonyl compounds (diethyl malonate)	
7	Exam 1	
7-8	Aromaticity of organic compounds <ul style="list-style-type: none">• Structure of benzene• Stability of benzene• Requirements for aromaticity• Classification of aromatic compounds• Nomenclature of aromatic compounds• Types of substituents on the benzene ring• Orientation of the substituents on the benzene ring	
8-9	Stereochemistry, chirality, types of isomerism <ul style="list-style-type: none">• Introduction of stereochemistry• Types of isomers• Important terms in stereochemistry• Enantiomers• Plane of symmetry• The biological importance of chirality• Diastereomers• Configuration• Calculation Number of stereoisomers• Meso compounds• Configuration in compounds with 2 or more stereogenic center• Physical properties of stereoisomers• Optical Activity• Racemic Mixtures• Properties of stereoisomers• Chiral Drugs• Fischer Projection Formulas• Naming from the Fischer Projection	
10	Stereochemistry, isomers in cyclic compounds, stereochemistry of drug action and interaction <ul style="list-style-type: none">• Geometrical Isomers in Alkenes• Geometric Isomers in Cyclic Systems• Conformational Isomers• Configurational Isomers Stereochemistry and Biologic Activity	
11	Polymers <ul style="list-style-type: none">• Definition of polymers• Importance of polymers• Classification• Chain growth Polymers	



	<ul style="list-style-type: none">• Step growth polymers Natural polymers	
	Exam 2	
12-14	Heterocycles in Organic chemistry <ul style="list-style-type: none">• Introduction• Heterocyclic compounds: nomenclature and classifications• Three and four membered heterocycles, reactions and synthesis• Five membered heterocycles, reactions and synthesis• Six membered heterocycles, reactions and synthesis• Fused heterocycles, reactions and synthesis• Heterocycles in drug groups (lactams, imidazole, pyridines---)	
15	Applications of topics covered 1-15.	
16	Final Exam	
Practical topics		
1	Introduction, Check In, Lab Procedure and Lab Safety.	
2	Working with Molecular Models, Conformational Analysis.	
3	Identification of Organic compounds (aldehydes, ketones, carboxylic acids and alcohols)	
4	Identification of alkyl halides and types of substitution reactions	
5	Identification of conjugated unsaturated system and differentiation between it and normal alkenes	
6	Revision	
7	Laboratory Exam #1	
8	Haloform formation test and identification of other carbonyl substitution reaction	
9	Interpretation of aromatic compounds	
10	Application on stereochemistry using molecular models and simulation	
11	Identification of heterocyclic compounds	
12	Revision	
13	Laboratory Exam #2	



4-Genetics /Genomics

Course Title	Genetics /Genomics			علم الوراثة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	MBS	212	2	2	-	-
Level/year	3 rd Level / 2 nd Year					
Prerequisites	-					
Co-requisites	-					

Course Description:

This course is offered to level 3 students to equip them with essential Genetics/Genomics concepts relevant to pharmacogenomics in preparation for their future professional practice. The course will be delivered through lecture in conjunction with small group discussions. Genetics is the core of understanding all biological processes.

Topics:

No	List of Topics
1	Introduction and Single-Gene Inheritance
2	Independent Assortment of Genes Mapping Eukaryotic Chromosomes by Recombination
3	Gene Interactions
4	Genetics of Bacteria and Their Viruses (Bacteriophages/Transduction)
5	Exam 1 DNA: Structure and Replication (Genetic Focus)
6	RNA: Transcription (Genetic Focus) Proteins: Translation (Genetic Focus)
7	Regulation of Gene Expression in Bacteria
8	Regulation of Gene Expression in Eukaryotes
9	Gene Isolation and Manipulation.
10	Exam 2 Genomes and Genomics
11	Mutation, Repair, and Recombination Large-Scale Chromosomal Changes
12	Population Genetics
13	Quantitative Genetics
14	Evolutionary Genetics
15	Introduction about Saudi Genome Program (SGP)
16	Final Exam



5- Physiology

Course Title	Physiology			علم وظائف الاعضاء		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	MBS	211	3	3	-	-
Level/year	3 rd Level / 2 nd Year					
Prerequisites	-					
Co-requisites	MBS 210					

Course Description:

Describes the integrated concepts of human organ system functions with particular emphasis on the central and autonomic nervous system; the cardiovascular, renal, pulmonary, digestive, endocrine and reproductive systems.

Topics:

No	List of Topics
1	Cell Membrane/ Organelles, cellular transport, skin function
2	Bone formation and turnover, regulation of calcium and phosphorus
3	Physiology of excitable cells, membranes and action potentials, skeletal muscles /excitation contraction coupling, neuromuscular transmission, synaptic transmission, cardiac muscle and smooth muscle
4	Autonomic nervous system, neurotransmitters, reflexes and integration, somatosensory system
5	Exam1
	Special Senses, sensory receptors, vision, hearing, chemical senses
6	Brain motor function, emotion, learning and memory, cerebral spinal fluid and the blood brain barrier
7	Cardiovascular physiology, cardiac cycle, electrocardiogram
8	Arterial circulation venous and lymphatic systems, regulation of cardiac output, control of blood flow, regulation of blood pressure
9	Renal physiology, regulation of fluids/electrolytes/pH, glomerular filtration and reabsorption, regulation of extra cellular volume
10	Exam 2
	Respiratory function, gas exchange and transport, pulmonary circulation
11	GIT function, propulsion and mixing of food, digestion and absorption, secretory functions of the GIT tract
12	Endocrine control of physiology, hypothalamic-pituitary hormones, thyroid hormones.
13	Adrenal hormones, insulin and glucagon, estrogen, progesterone, testosterone
14	Male and female reproduction, pregnancy and lactation
15	Metabolism and temperature regulation, fever, hepatic function
16	Final Exam



Level 4

1- Pathophysiology 1

Course Title	Pathophysiology 1			علم أمراض وظائف الأعضاء (1)																																						
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours																																						
				LT	LB	TR																																				
	MBS	213	2	2	-	-																																				
Level/year	4 th Level / 2 rd Year																																									
Prerequisites	MBS 210, MBS 211																																									
Co-requisites	-																																									
Course Description: Describe the disorders of inflammation, immunity, neoplasia, fluid, electrolyte and acid-base imbalances, potential complications of pregnancy, aging, effects of immobility, influence of stress and pain, substance abuse and environmental hazards, the pathophysiology of digestive, renal and Musculoskeletal and skin disorders.																																										
Topics:																																										
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2- Pharmaceutical Analytical Chemistry

Course Title	Pharmaceutical Analytical Chemistry			الكيمياء التحليلية الصيدلانية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	201	4	3	2	-
Level/year	4 th Level / 2 rd Year					
Prerequisites	-					
Co-requisites	-					
Course Description:						
<p>The course includes identification of Mole concept, stoichiometry, and different analytical techniques used for quantitative and qualitative determination of pharmaceuticals e.g., titration, spectroscopy, chromatography Capillary electrophoresis, Potentiometry, Conductometry, and Polarography</p> <p>The course gives an introduction about quality control of pharmaceutical formulations and their pharmacopoeia specifications</p>						
Topics:						
No	List of Topics					
1	Mole concept, stoichiometry, conversion factors and problems on mole concept					
2-3	Titration: acid-base, non-aqueous, precipitation, redox, and complexation titrations					
4-7	Spectroscopic analysis: ultraviolet, spectrofluorimetry, infra-red, nuclear magnetic resonance (¹ H-NMR and ¹³ C-NMR), atomic spectroscopy, and mass spectroscopy					
8-10	Mid 1 Instrumental and applied analysis: TLC, HPLC, GC, Capillary electrophoresis, Potentiometry, Conductometry, Polarography					
11	Introduction to quality control (QC) of drugs Chemical purity of drugs and official methods of QC					
12	Specifications of dosage forms Sampling and documentation					
13	Analytical methods of analysis: Titrimetric, Electrochemical, Spectrometric, chromatography					
14-15	Mid 2 Validation of analytical methods Stability testing of pharmaceuticals					
16	Final exam					
Practical topics						
1	Acid- base titration (NaOH/HCl) Non-aqueous titration (estimation of sodium benzoate via titration with perchloric acid)					
2	Precipitation titration (Mohr's method/ Volhard method)					



3	Redox titration (estimation of oxalate) Complexation titration (Mg^{2+} and Ca^{2+} determination)
4	Colorimetry ($KMnO_4$ and $K_2Cr_2O_7$) Problems on Beer-Lambert law
5	Exam 1
6	Demonstration on fluorometric determination Interpretation of spectroscopic spectra (IR/ NMR/ MS/ atomic)
7	Interpretation of spectroscopic spectra (IR/ NMR/ MS/ atomic)
8	Interpretation of spectroscopic spectra (IR/ NMR/ MS/ atomic)
9	Interpretation of chromatograms (TLC, HPLC, GC)
9	Interpretation of chromatograms (TLC, HPLC, GC)
10	Conductometric determination (HCl/ acetic acid)
11	Potentiometric determination (HCl/ acetic acid)
12	Assay of aspirin tablet and limit test of salicylic acid
13	Exam 2



3- Basic Principles of Industrial Pharmacy

Course Title	Basic Principles of Industrial Pharmacy			المبادئ الأساسية للصيدلة الصناعية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	221	2	2	-	-
Level/year	4 th Level / 2 rd Year					
Prerequisites	PHS 220					
Co-requisites	-					
Course Description:						
<p>Drug Development Processes, Manufacturing Principles, GMP, Manufacturing Pre-formulation, Routes of Administration. Understand the concepts of pharmaceutical operations. Explain and discuss pre-formulation, milling, particle size separation and analysis, powder flow, powder mixing, granulation, drying, clarification and filtration processes.</p>						
Topics:						
No	List of Topics					
1-2	Routes of Administration and Drug Development Process					
3	Pre-formulation - Particle Characterization in the Pharmaceutical Industry (size and Shape)					
4	Pre-formulation - Particle Characterization in the Pharmaceutical Industry (polymorphism, Particle distribution)					
5	Milling: Mechanisms involved, methods of size reduction in small and large scales, equipment classified according to the mechanism of action					
6	Mixing: Fluid mixing, solid mixing, semisolid mixing (mechanisms, and equipment) Powder Flowability: Powder flowability characterization					
7	Drying: Definition and purposes, mechanisms of drying, classification of solids based on drying behavior. Drying Equipments: Spray drying, Freeze drying					
8	Exam 1					
8-9	Pre-formulation Solution Theory (solubility, dissolution, Acid-Base equilibrium, Buffer and isotonicity, Definition of dissolution and dissolution rate, NoyesWhitney equation. Ficks law,					
10	Pre-formulation diffusion- Concepts of surfaces, interfaces, surface and interfacial tension Partitioning coefficient					
11-12	Pharmaceutical stability problems (hydrolysis, oxidation, photo-degradation and Stability Studies)					
12	Exam 2					
13	Radio pharmaceuticals					
14-15	GMPs					
16	Final Exam					



4- General Immunology

Course Title	General Immunology			علم المناعة العام		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	MBS	216	2	2	-	-
Level/year	4 th Level / 2 rd Year					
Prerequisites	-					
Co-requisites	-					

Course Description:

Introduces the principles of immunology to learn about the function and processes of the immune system. The course includes wide knowledge about the role of the innate and adaptive immunity in disease prevention, the mechanism of immune responses, immunological disorders, immunotherapy and vaccines.

Topics:

No	List of Topics
1	Overview of the immune system
2	Innate (Non-specific) Immunity
3	Cell mediated immunity
4	Cells involved in immune responses and antigen recognition
	Cytokines and their therapeutic uses
5	Immunoglobulins; structure, function, classes, isotypes and allotypes
6	Humoral immune response
	Exam 1
7	Complement system
9	Serological testing
10	Tumor Immunology
	Exam 2
11	Immunological disorders: Hypersensitivity reactions
12	Immunological disorders: Autoimmune Diseases
	MHC complex; genetics and role in transplantation & Mechanisms of graft rejection
13	Immunological disorders: Immunodeficiency
14	Immunotherapy (immunomodulators and immunosuppressants)
15	Vaccination
16	Final Exam



5- Introduction to Medical Microbiology

Course Title	Introduction to Medical Microbiology			مقدمة في الاحياء الدقيقة الطبية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	MBS	215	4	3	2	-
Level/year	4 th Level / 2 rd Year					
Prerequisites	-					
Co-requisites	MBS 216					

Course Description:

This course focuses on different topics of medical microbiology including structure and physiology microorganisms, host – microorganism's relationship, epidemiology and clinical diagnostic microbiology. In addition, bacterial, viral, protozoal, and fungal infections of different body systems are covered.

A full description of the fundamentals of antibiotics in relation to basic bacterial cell structure, antimicrobial agents and resistance.

Topics:

No	List of Topics
1	Course Overview, Host-microorganism's relationship Microorganisms' structure and physiology
2	Gram positive and Gram negative bacteria and Anaerobic infections
3	Bacterial Genetics Pathogenesis of bacterial infections Clinical Diagnostic Microbiology
4	Antimicrobial Agents and Resistance
5	Epidemiology of Important Diseases Cardiovascular Infections
6	Respiratory Infections
7	Skin and soft tissue Infections Exam #1
8	Central nervous system Infections
9	GI and Food Borne Infections
10	Genitourinary Infections (UTIs and STDs)
11	Introduction to Mycology Common Fungal Infections (Systemic and Superficial)
12	Introduction to Parasitology and Protozoal Infections Exam #2
13	Introduction to Virology Respiratory viral Diseases
14	GI Viral Diseases Arthropod borne Viral Diseases
15	Blood-born viral infections



	Sexually Transmitted Viral Diseases
16	Final Exam
Practical topics	
Lab 1: Check-in, Guidelines and Light microscopy	
Lab 2: Sterilization and disinfection	
Lab 3: Pure culture Technique and Identification of bacterial morphology on different culture media	
Lab 4: Gram staining and Zeihl Nelsen staining	
Lab 5: Dilution and Plating; Calorimetry and Turbidimetry	
Lab 6: Effect of environment on bacterial growth (Oxygen, Temperature, pH, Salt)	
Lab 7: Laboratory Exam (in lab practical)	
Lab 8: Biochemical reactions used for bacterial identification	
Lab 9: Antibiotic sensitivity testing	
Lab 10: -Identification of bacteria from mixed culture (Culturing and Gram staining) - Laboratory diagnosis of Fungal infections	
Lab 11: -Identification of bacteria from mixed culture (Sub-culturing and Biochemical testing) -Laboratory diagnosis of Parasitic infections	
Lab 12: -Results of bacterial Identification -Molecular techniques for microorganisms Identification	
Lab 13: Viral cultivation and serological reactions	
Lab 14: Laboratory Final Exam (in lab practical)	



6- Introduction to Pharmacy Practice and Health Care Systems

Course Title	Introduction to Pharmacy Practice and Health Care Systems			مقدمة في ممارسة مهنة الصيدلة وأنظمة الرعاية الصحية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	200	2	2	-	-
Level/year	4 th Level / 2 rd Year					
Prerequisites	-					
Co-requisites	-					

Course Description:

An introduction to the history and contemporary practice of pharmacy. Students will have opportunity to identify personal career pathway preferences

Topics:

No	List of Topics
1	<p>Introduction-Review course syllabus Healthcare Delivery in Saudi Arabia: Past and Current Review healthcare in Saudi Arabia both in the past and current: Highlight the role of the pharmacist both in the past and current</p> <p>Health Care Professionals and Interdisciplinary Care Identify the characteristics of a healthcare professional Describe the various healthcare professionals involved in providing healthcare Define multidisciplinary and interdisciplinary care and inter-professional teams</p>
2	<p>The Pharmacists and the Pharmacy Profession Evolving roles of pharmacists Licensure and certification relevant to Saudi Arabia Professional Organizations relevant to Saudi Arabia</p> <p>Health Care Ethics and Pharmacy</p>
3	<p>Roles of the Pharmacist: 1) Provide Patient-Centered Care, 2) Systems Management, and 3) Promote Public Health Introduction that describes that each of the roles entails.</p> <p>Patient-Centered Care: · Overview of Pharmaceutical Care as a practice philosophy · Pharmaceutical Care requires “Caring” Case Studies and discussion</p>
4	<p>Patient-Centered Care-Medication Therapy Management (MTM) · Description of how a pharmacist performs a patient workup, develops a pharmaceutical care plan, and follow up to assure optimal patient</p>



	<p>outcomes. A practitioner describes several examples of a patient where this was accomplished.</p> <p>Medication Therapy Management: Success stories in pharmacy (review projects that have demonstrated the value/effectiveness of MTM)</p> <p>Hospitals and the Roles of the Pharmacist</p>
5	Public Health: Disease Prevention and Health Promotion Introduction
6	<p>Medication Adherence: Introduction</p> <ul style="list-style-type: none"> · Definition of medication adherence · Factors contributing to medication adherence <p>Disease Prevention and Health Promotion</p>
7	<p>Hospitals and the Roles of the Pharmacist</p> <p>Expert speaker: hospital pharmacist - Dispensing or another role of a pharmacist in the hospital setting</p> <p>Expert speaker: hospital pharmacist - Medication Safety or another role of a pharmacist in the hospital setting</p>
	Exam 1 (topics from week 1-6)
8	<p>Expert speaker: hospital pharmacist - Director or other administrator</p> <p>Hospitals and the Roles of the Pharmacist</p> <p>Expert speaker: hospital pharmacist - Clinical Specialist</p>
9	<p>Ambulatory Care and the Roles of the Pharmacist</p> <p>Expert speaker: ambulatory care pharmacist</p> <p>Evolving Roles of Pharmacists: Medication Therapy Management</p>
10	<p>Home Care/Community Care and the Roles of the Pharmacist</p> <p>Expert speaker: Community or home care pharmacist (Review credentials required to assume the role and daily responsibilities)</p>
11	<p>Other Roles of the Pharmacist: Ministry of Health</p> <p>Expert Speaker: Individual with a pharmacist position in the Ministry of Health</p>
12	<p>Other Roles of the Pharmacist: Research, and Industry</p> <p>Expert Speaker: Researcher or executive from the pharmaceutical industry</p>
13	<p>Other Roles of the Pharmacist: in Pharmaceutical Companies</p> <p>Expert Speaker: Researcher or executive from the pharmaceutical companies</p>
14	<p>Evolving Roles of Pharmacists in Saudi Arabia</p> <p>1-Discussion led by a panel of leaders in Saudi Arabia</p> <p>2-Speakers should emphasize that there are many roles of a pharmacist that have not been highlighted during class sessions like Entrepreneurship, Marketing and Business - the literature and web discussion of these roles.</p>
15	Exam 2



Level 5

1- Pharmaceutical dosage forms and stability

Course Title	Pharmaceutical dosage forms and stability			الأشكال الصيدلانية وثباتها																															
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours																															
	PHS	322	4	LT	LB	TR																													
				2	4	-																													
Level/year	5 th level / 3 rd year																																		
Prerequisites	PHS 221																																		
Co-requisites	-																																		
Course Description:																																			
<p>Types of Dosage Forms and Routes of Administration. Manufacturing of different dosage forms: Powders and Granules, Capsules, Tablets, Solution Theory (solubility, dissolution, polymorphism, crystal structure), Pharmaceutical Liquids, Polyphases Systems (Colloids, Gels, Suspension), Surface Tension and surfactants, Emulsions, Topical dosage Forms (Absorption Principles, Creams, Ointments), Mucosal Delivery (Pulmonary), Pharmaceutical Compounding Principles, Controlled Release Products</p>																																			
Topics:																																			
<table border="1"><thead><tr><th>No</th><th>List of Topics</th></tr></thead><tbody><tr><td>1</td><td>Introduction to Dosage Forms and rout of administration and additives rules</td></tr><tr><td>2</td><td>Packaging, storage, and labeling of Pharmaceuticals</td></tr><tr><td>4</td><td>Powders and Granules</td></tr><tr><td>5</td><td>Capsules</td></tr><tr><td rowspan="2">6-7</td><td>Exam 1</td></tr><tr><td>Tablets (Adv., disadvantage, type of tablets)</td></tr><tr><td>8</td><td>Fundamentals of controlled delivery systems (Introduction & terminology Rational of controlled delivery dosage forms-Advantages of controlled delivery dosage forms-Limitations of controlled delivery dosage forms-Potential applications of controlled dosage forms-Technologies of controlled delivery of tablets)</td></tr><tr><td>9</td><td>Pharmaceutical Liquids-Solution (Syrups, Elixirs. Tinctures)</td></tr><tr><td>10</td><td>Polyphasic Systems (Colloids, Gels, Suspension)</td></tr><tr><td>11</td><td>Topical dosage Forms (emulsion, Creams, Ointments)</td></tr><tr><td>12</td><td>suppository, batches</td></tr><tr><td>13</td><td>Exam 2</td></tr><tr><td>13-14</td><td>Pharmaceutical Aerosols(Properties and Definitions-Aerosol Packaging Components-Formulation of Pharmaceutical Aerosols-Manufacturing and Testing of Aerosols-Advantages and Disadvantages of Aerosols)</td></tr><tr><td>15</td><td>Novel dosage forms</td></tr></tbody></table>							No	List of Topics	1	Introduction to Dosage Forms and rout of administration and additives rules	2	Packaging, storage, and labeling of Pharmaceuticals	4	Powders and Granules	5	Capsules	6-7	Exam 1	Tablets (Adv., disadvantage, type of tablets)	8	Fundamentals of controlled delivery systems (Introduction & terminology Rational of controlled delivery dosage forms-Advantages of controlled delivery dosage forms-Limitations of controlled delivery dosage forms-Potential applications of controlled dosage forms-Technologies of controlled delivery of tablets)	9	Pharmaceutical Liquids-Solution (Syrups, Elixirs. Tinctures)	10	Polyphasic Systems (Colloids, Gels, Suspension)	11	Topical dosage Forms (emulsion, Creams, Ointments)	12	suppository, batches	13	Exam 2	13-14	Pharmaceutical Aerosols(Properties and Definitions-Aerosol Packaging Components-Formulation of Pharmaceutical Aerosols-Manufacturing and Testing of Aerosols-Advantages and Disadvantages of Aerosols)	15	Novel dosage forms
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16	Final Exam
Practical topics	
1	labeling of Pharmaceuticals
2	Powder (milling, and flowability)
3	Granulation
4	Capsules preparation
5	Tableting
6	Coating tablet preparation
7	Solution preparation cough syrup
8	Cold Cream preparation
9	Microencapsulating
10	Suppository preparation
11	Aerosols uses
12	Quality control of dosage forms
13	Revision
14	Final Practical Exam



2- Pharmaceutical Biochemistry

Course Title	Pharmaceutical Biochemistry			الكيمياء الحيوية الصيدلانية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	302	4	4	-	-
Level/year	5 th level / 3 rd year					
Prerequisites	PHS 200					
Co-requisites	-					

Course Description:

An introduction to the basic principles associated with medicinal chemistry, pharmacology, and bio pharmaceutics focusing on the chemical properties of drug molecules and their targets

Topics:

No	List of Topics
1	Introduction to biochemistry & carbohydrates structure
2	Lipid structure
3	Amino acids and protein structure
4	Enzymes (types, functions, role in diagnosis of some diseases)
5	Vitamins (types, functions, and deficiencies)
	Exam 1
6	Introduction to metabolism Respiratory chain & oxidative phosphorylation
7	Carbohydrates digestion & metabolism: Glycolysis & Krebs cycle
8	Gluconeogenesis Glycogen synthesis and breakdown
9	Lipid digestion & metabolism (lipogenesis, lipolysis, fatty acid oxidation & fatty acid synthesis)
10	Protein digestion and metabolism (Amino acids synthesis and degradation)
11	Ketone bodies & Integration of metabolism
	Exam 2
12	Metabolic abnormalities
13- 14	Molecular biology (nucleic acid structure, replication, transcription & translation) Biotechnology
15	Revision
16	Final exam



3- Medicinal chemistry and drug design

Course Title	Medicinal chemistry and drug design			الكيمياء الدوائية وتصميم الأدوية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	303	2	2	-	-
Level/year	5 th level / 3 rd year					
Prerequisites	PHS 200					
Co-requisites	PHS 302 PHS 310					

Course Description:

This course is designed to expose pharmacy students to various aspects of new drug development/discovery, target identification, lead discovery and optimization..

Topics:

Week	List of Topics
1	Introduction to medicinal chemistry
1-2	Physicochemical and biopharmaceutical properties of drug substances and pharmacokinetics; physicochemical properties of drugs (acid-base properties + water solubility) hansch equation.
3	Prodrugs; Types Objectives of prodrug design Polymorphism Examples
4	Drug metabolism; Introduction to pathways of metabolism phase 1 reactions –phase2. Factors affecting metabolism Drug biotransformation pathway (phase 1)
5	Drug metabolism Drug biotransformation pathway (phase 2) Applications on phases 1 and 2
6	Receptors as targets for drug discovery; Introduction to drug discovery Affinity: the role of chemical bonding, the role of confirmation, the role of stereochemistry
7	Exam 1
	Drug discovery through enzyme inhibition; General concepts of enzyme inhibition Antimetabolites Examples: inhibitors used in cancer therapy



		inhibitors used in HIV management	
8		Drug discovery through enzyme inhibition; General concepts of enzyme inhibition Antimetabolites Examples: inhibitors used in cancer therapy inhibitors used in HIV management	
9		Drug design; Quick overview to pharmacophore Types of drug design Combinatorial chemistry and drug discovery by screening	
10		Drug design; High throughput screening Lead compounds definition Software applied	
11		Pre-lab for the simulation; Definition of the simulation Overview on simulation software	
		Exam 2	
12-13		Simulation lab; Applications on drug design (visualization of ligand receptor interaction using software).	
14-15		Application on drug molecules	
16		Final exam	



4- Basic Principles of Pharmacology

Course Title	Basic Principles of Pharmacology			المبادئ الأساسية في علم الأدوية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	310	3	3	-	-
Level/year	5 th level / 3 rd year					
Prerequisites	-					
Co-requisites	MBS 214 CPP 310					

Course Description:

This course is designed to develop an understanding of the basic principles and concepts of pharmacology emphasizing on pharmacokinetics and pharmacodynamics. It follows a pathophysiologic approach in explaining mechanisms of drugs such as those used in the peripheral and central nervous systems, including drugs of abuse, the inflammatory and pain pathways, and vasoactive substances. In each of the systems covered, drug classifications, mechanisms and common examples in each category are emphasized.

Topics:

No	List of Topics
1-2	Section I: fundamental principles of pharmacology A-Pharmacokinetics I: • Routes of administration -absorption-bioavailability-distribution Pharmacokinetics II : •Drug metabolism-excretion Contact Hours •Clinical applications of pharmacokinetics(clearance-Half life and therapeutic dosing and frequency)
2-3	B-Pharmacodynamics I; drug –receptor interaction • Targets of drug action Drug–Receptor Interactions: To discuss some types of receptors as a family with examples of medications and common mechanism of action for all receptors from the same family. 1- G protein–coupled receptors (GPCRs). 2- Receptor tyrosine kinases (RTKs). 3- Nuclear receptors. • Major types of drug receptors-receptor regulation Pharmacodynamics II; • Agonists and antagonists • dose response curves • concepts in therapeutic (therapeutic index and window) • drug-drug interaction



4	Section IIA; Principles of autonomic and peripheral nervous system pharmacology • adrenergic pharmacology (pharmacological classes and agents)
5-6	Cholinergic pharmacology (pharmacological classes and agents)
6	Exam I
7	Section IIB; Principles of central nervous system pharmacology Pharmacology of GABAergic and Glutamatergic neurotransmission
8	Pharmacology of Dopaminergic Neurotransmission
9-10	Pharmacology of serotonergic Neurotransmission
10-11	Local anesthetic pharmacology General anesthetic Pharmacology
11	Exam II
12	Pharmacology of analgesia (pharmacological classes and agents)
13	Pharmacology of drugs of abuse (mechanisms of tolerance, dependence and withdrawal)
14	Section III; Principles of inflammation and immune Pharmacology, Pharmacology of eicosanoids & histamine
15	Section IV; Pharmacology of Purine, Nitric Oxide and vasoactive Substances
16	Final Exam



5- Pathophysiology 2

Course Title	Pathophysiology 2			علم أمراض وظائف الأعضاء (٢)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	MBS	214	3	3	-	-
Level/year	5 th level / 3 rd year					
Prerequisites	MBS 213					
Co-requisites	-					

Course Description:

Describe the pathophysiology of basic bodily systems including blood and lymphatic, cardiovascular, respiratory, eye and ear, acute and chronic neurologic, oncologic disorders, endocrine disorders and reproductive system of both male and female

Topics:

No	List of Topics
1-2	Cardiovascular Disorders
3-4	Pathophysiology of Blood and Lymphatic systems, anemias, coagulation disorders, sickle cell disease
5-6	Respiratory disorders, asthma, COPD, CF, pulmonary hypertension, allergic rhinitis
6	Exam 1
7	Acute neurologic disorders, brain injury
8-9	Chronic neurologic disorders, multiple sclerosis, epilepsy, Parkinson s, headache
10	Eye and ear disorders, glaucoma
	Exam 2
11	Endocrine disorders: Diabetes mellitus
12	Endocrine disorders: Thyroid, adrenal and pituitary, sex hormones
13-14	Reproductive system disorders
15	Oncologic Disorders, breast cancer, lung cancer, lymphoma, leukemia
16	Final Exam



6- Patient Care Laboratory

Course Title	Patient Care Laboratory			مختبر الرعاية للمرضى		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	310	2	-	4	-
Level/year	5 th level / 3 rd year					
Prerequisites	-					
Co-requisites	PHS 310					

Course Description:

This course applies concepts related to pharmaceutical science to the care of the patients and interpret medication orders with accuracy. It also focuses on performing physical assessment including cardiac, respiratory, endocrine and neurologic systems.

The course also provides students experience in virtual pharmacology experiments

Topics:

No	List of Topics
1	Pharmaceutical Care and Medication Therapy Management
2	Prescription Overview and Medication Reconciliation
3	Vitals
4	Cardiovascular System
5	Respiratory System
6	Endocrinal system (Diabetes)
7	Hepatic and Renal System
8	Neurological System
9	Formative OSCE
10	Introduction to the Virtual Pharmacology lab (experimental setup; types of experiments; equipment and tools; experimental processes; recording measurements; plotting of Dose-Response curves)
11	Organ-bath simulation on effects of drugs on smooth muscles of different organs
12	Cardiovascular System Simulation (effects of autonomic and other CV drugs on the heart and BP)
13	Sim-Nerve, CNS experiments on anticonvulsants and other CNS drugs
14	Neuromuscular junction simulated pharmacology. Pharmacology of Inflammation
15	Summative OSCE Pharmacology lab final exam



Level 6

1- Biostatistics

Course Title	Biostatistics			الإحصاء الحيوي		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	303	2	1	2	-
Level/year	6 th Level / 3 rd Year					
Prerequisites	-					
Co-requisites	-					

Course Description:

Biostatistics provides an introduction to the treatment and analysis of the data derived from biological, biomedical, and health-related sciences.

Topics:

No	List of Topics
1	Introduction and General Concepts (including types of measurements and data quality).
1-2	Types of Studies and Study Results (including surveys, comparative studies, stem plots, charts & tables, and summary statistics)
3	Probability Concepts (including random variable types, binomial distributions, normal distributions)
4	Exam 1
4-5	Introduction to Statistical Inference (including concepts, sampling behavior of M mean, and sampling behavior of a Count and Proportion).
6-7	Hypothesis Development and Testing (including null and alternative hypothesis, test statistics)
8	Basics of Confidence Intervals (including estimation, sample size requirements, and relation to hypothesis testing)
9	Exam 2
9-10	Quantitative Response Variable (including inference about a mean, comparing independent means and comparing several means)
11-12	Correlation and Regression (including multiple linear regression models)
13-14	Categorical Response Variable (including inference about single and multiple proportions).
15	Statistical Methods for Multiple Variables
16	Final Exam



2- Biopharmaceutics and Pharmacokinetics

Course Title	Biopharmaceutics and Pharmacokinetics			الصيدلة الحيوية وحركية الدواء		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	323	4	3	2	-
Level/year	6 th Level / 3 rd Year					
Prerequisites	PHS 322, PHS 220, PHS 310					
Co-requisites	-					

Course Description:

The theoretical and practical considerations of the processes of drug absorption, distribution, metabolism and excretion and the mathematical models that describe these events, including the calculation of dosage regimens for patients.

Topics:

No	List of Topics
1	-Bioavailability -Administrative rate
2	Desired plasma concentration, pharmacogenetics.
3	Volume of distribution
4	Clearance
5	Elimination rate constants and half-life
	Exam 1
6	Maximum and minimum plasma concentrations, relationship between pharmacokinetics and pharmacodynamics
7	Selecting the appropriate equations
8	Interpretation of plasma drug concentrations, bioavailability and bioequivalence
9	Creatinine clearance and dosage adjustment in renal and hepatic disease
10	Dialysis of drugs
	Exam 2
11	Sample pharmacokinetic calculations in practice: Aminoglycosides, carbamazepine, digoxin
12	Sample pharmacokinetic calculations in practice: Ethosuximide, immunosuppressants, lidocaine
13	Sample pharmacokinetic calculations in practice: Lithium, methotrexate, Phenobarbital.
14	Sample pharmacokinetic calculations in practice: Phenytoin, valproic acid, vancomycin.
15	Nomograms for calculating body surface area and their use. Algorithm for evaluating and interpreting plasma concentrations.



16	Final Exam
Tutorial sessions	
1	Introduction to laboratory activities
2	Graphing and area under the curve
3	Protein binding and volume of distribution
4	One compartment model
5	Multi-compartment models
6	Clearance
7	Multi dose models
8	Drug interactions, metabolism kinetics
9	Drug product selection based on bioavailability data 1
10	Drug product selection based on bioavailability data 2
11	Dosage calculations - aminoglycosides
12	Dosage calculations – digoxin
13	Dosage calculations – lithium
14	Dosage calculations – vancomycin
15	Review



3- Integrated Pharmacotherapy 1

Course Title	Integrated Pharmacotherapy 1			العلاج الدوائي المتكامل (١)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	320	3	3	-	-
Level/year	6 th Level / 3 rd Year					
Prerequisites	PHS 310, PHS 303					
Co-requisites	CPP 311					

Course Description:

Prepares students to assess and manage the pharmacotherapy of patients with common fluid and electrolyte disorders, acute kidney injury (AKI), chronic renal disease (CKD), and liver and liver cirrhosis. This course will develop the clinical, pharmacological and chemical knowledge of the management of kidney, fluid and electrolytes and liver cirrhosis

Topics:

No	List of Topics
1	Syllabus Drug Biotransformation, Na/K/Ca/Ph supplements. Pharmacology of Diuretics (No IRAT this session)
	Medicinal Chemistry and Pharmacology of Diuretics
2	Dehydration/fluid overload
3	Case studies: Fluid replacement therapy (calculations) (No IRAT this session)
4	Sodium and water disorders (including syndrome of inappropriate antidiuretic hormone, and diabetes insipidus)
5	Potassium Management Phosphorus & Magnesium Management Calcium Management
6	Acid Base Disorders I Acid Base Disorders II Acid Base Disorders III
7	Case Studies: Acid-Base Disorders (No IRAT this session)
8	Exam 1
9	Acute Renal Failure (prerenal, intrinsic, and postrenal)
10	Case studies: Acute Renal Failure Management (No IRAT this session)
11	Drug-induced renal disorders and renal dose adjustments Chronic Kidney Disease I (prevention of progression)
12	Chronic Kidney Disease II; complications (anemia, bone and mineral disorders) Case Studies: Chronic Kidney Disease



13	Cirrhosis, end-stage liver disease, and complications (e.g., portal hypertension, ascites, varices, hepatic encephalopathy, hepatorenal syndrome) Drug induced GI and Hepatic Disorders
14	Case studies: Liver disease complications (e.g., portal hypertension, ascites, varices, hepatic encephalopathy, hepatorenal syndrome)
15	Exam 2



4- Principles of Natural Products and Evidence Based Medicine

Course Title	Principles of Natural Products and Evidence Based Medicine			مبادئ المنتجات الطبيعية والعلاج المبني على الأدلة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	304	3	3	-	-
Level/year	6 th Level / 3 rd Year					
Prerequisites	-					
Co-requisites	-					

Course Description:

An Introduction of the use of natural products and evidence-based decision-making related to natural product. Emphasis is placed on appropriate use of natural products for common health needs and medical disorders.

Topics:

No	List of Topics
1	Introduction, Review of Syllabus Natural Products Terminology (natural products, phytomedicines, phytotherapy, alternative and complementary therapy) What they are, history and current use
2	Evidence-Based Approach and Literature resources for Evidence-Based Decisions
3	How Natural Products are Prepared for Patients Use
4	How Natural Products are Prepared for Patients Use Dosage Forms Used for Natural Products
5	Natural Products and Drug Interactions Drugs Used in Common Illness (Cold and Flu)
6	Drugs Used for Gynaecologic Indications and Osteoporosis – (Chasteberry, Black Cohosh, Phytoestrogens)
7	Drugs Used for Benign Prostatic Hyperplasia and the Urinary Tract (BHP: Saw Palmetto, Nettle Root, Pumpkin Seed, Grass Pollen, Pygeum, Urinary: Uva Ursi leaves, Cranberries; Drugs Used in Erectile Dysfunction)
8	Drugs Used for Benign Prostatic Hyperplasia and the Urinary Tract (BHP: Saw Palmetto, Nettle Root, Pumpkin Seed, Grass Pollen, Pygeum, Urinary: Uva Ursi leaves, Cranberries; Drugs Used in Erectile Dysfunction).
	Exam 1
9	Drugs that Increase Resistance to disease/ Immunological agents (Ginseng, Elutherococcus root) Drugs Used in CNS Disorders – Part 1 (St John's Wort, kava, Valerians, Hops, Lemon Balm, Passion Flower, Lavender).



10	Drugs Used in CNS Disorders – Part 2 (St John's Wort, kava, Valerians, Hops, Lemon Balm, Passion Flower, Lavender).
	Drugs Used for Cardiovascular Problems –Part1 Heart Failure and Coronary Insufficiency:Hawthorn Atherosclerosis & Arterial Occlusive Disease: Garlic, Red Yeast Rice. Chronic Venous Insufficiency: Horse Chestnut.
11	Drugs Used for Cardiovascular Problems- Part 2 Heart Failure and Coronary Insufficiency:Hawthorn Atherosclerosis & Arterial Occlusive Disease: Garlic, Red Yeast Rice. Chronic Venous Insufficiency: Horse Chestnut.
	Drugs Used for Cardiovascular Problems- Part 3 Heart Failure and Coronary Insufficiency:Hawthorn Atherosclerosis & Arterial Occlusive Disease: Garlic, Red Yeast Rice. Chronic Venous Insufficiency: Horse Chestnut.
12	Drugs Used in Respiratory Disorders – Part 1 & 2 (Herbal Cough Remedies, Herbal expectorants)
	Exam 2
13	Drugs Used in GI Disorders – Part 1 & 2 (Peppermint, Licorice root, Chamomile, Linseed, Anthranoid- containing herb, Artichoke leaves).
14	Drugs Used for Rheumatic Conditions (Devil’s Claw, Nettle tops, Willow bark, Ash, Aspen).
	Drugs Used for Weight Loss and Performance Enhancement.
15	Drugs used for diabetes
16	Final Exam



5- Regulations & Health Ethics

Course Title	Principles of Pharmacy Regulations & Health Ethics			مبادئ أنظمة الصيدلة وأخلاقيات التعامل الصحي		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	302	2	2	-	-
Level/year	6 th Level / 3 rd Year					
Prerequisites	-					
Co-requisites	-					
Course Description:						
<p>An introduction to the Kingdom of Saudi Arabia legal system, legal regulations pertaining to the practice of pharmacy, professionalism, and ethical decision-making in practice and in providing patient-centered care.</p>						
Topics:						
No	List of Topics					
1	The Kingdom of Saudi Arabia legal system					
2	The Kingdom of Saudi Arabia legal system					
3	Medications and the practice of pharmacy: Legal Regulations					
4	Medications and the practice of pharmacy: Legal Regulations					
5	Medications and the practice of pharmacy: Legal Regulations					
6	Professional and Ethical Expectations of a Pharmacist					
7	Exam 1					
8	Introduction to Ethics: 4 Questions of Ethics					
9	Ethical principles in pharmacy ethics: Benefiting the patient and others; Justice, Autonomy					
10	Ethical principles in pharmacy ethics: Veracity, Fidelity, Avoidance of Killing					
11	Case Studies in Ethics: issues related to the development, promotion, sales, and use of medications					
12	Case Studies in Ethics: end-of-life care to a patient					
13	Case Studies in Ethics: Pharmacy practice and the provision of patient-centered care					
14	Case Studies in Ethics: Working in Teams					
15	Exam 2					



6- Integrated Patient Care Laboratory (1)

Course Title	Integrated Patient Care Laboratory (1)			مختبر الرعاية المتكاملة للمرضى (١)																																		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours																																		
				LT	LB	TR																																
	CPP	311	2	-	4	-																																
Level/year	6 th Level / 3 rd Year																																					
Prerequisites	CPP 310																																					
Co-requisites	CPP 320, PHS 304																																					
Course Description: <p>The course is a continuation of patient care lab and will act as a stepping stone for upcoming integrated patient care labs. It interprets common clinical findings from the patient interview, history, physical examination, and laboratory data that would be used for the diagnosis and management of medical conditions (fluids, electrolytes, acid/base disorders, acute/chronic renal disease), and evaluates the appropriateness of patient-centered drug therapy regimens. This course also designs and redesign an evidence-based pharmacotherapy plan that includes problem, goal, drug, dose, route, frequency, and monitoring for medical conditions (fluids, electrolytes, acid/base disorders, acute/chronic renal diseases)</p>																																						
Topics:																																						
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7- Professional Communication Skill

Course Title	Professional Communication Skill			مهارات الاتصال المهني		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	301	2	2	-	-
Level/year	6 th Level / 3 rd Year					
Prerequisites	-					
Co-requisites	-					
Course Description:						
<p>An introduction to effective communication in the practice setting. Students will learn how to conduct a patient interview and conduct motivational interviewing through lectures, discussions and role-play activities</p>						
Topics:						
No	List of Topics					
1	Introduction – review course syllabus and introduce concepts to be learned during the course.					
2	Patient Centered Communication and Interpersonal Communication: A. Pre-class Readings: a. Patient-Centered Communication in Pharmacy Practice					
3	Patient Centered Communication and Interpersonal Communication: A. Pre-class Readings a. Principles and Elements of Interpersonal Communication					
4	Active Listening and Empathy: A. Pre-class Reading: Listening and Empathetic Responding B. Instructor will lead a discussion and role play activities					
5	Nonverbal Communication A. Pre-class Reading: Nonverbal Communication B. Instructor will lead a discussion and role play activities C. Assignment: Students should begin on developing an “Interview Guide” that they can use when they conduct an interview.					
6	Barriers in Communication & Assertiveness A. Pre-class Reading: Barriers in Communication and Assertiveness B. Assignment: Students should continue developing an “Interview Guide” that they can use when they conduct an interview.					
7	Exam 1					
8	How to Conduct a Patient Interview A. Reading: Interviewing and Assessment B. Faculty will review how to conduct an interview. C. Assignment: Students should complete an “Interview Guide” that they can use when they conduct an interview					
9	How to Conduct a Patient Interview					



	<p>A. Faculty will then role play interviewing a patient; students will critique the interview using their “Interview Guide”.</p> <p>B. Assignment: Students should role play with each other to develop their interview skills.</p> <p>C. Students turn in their peer reviews and self-reviews for grading.</p>	
10	<p>Assessment – Conducting a Patient Interview</p> <p>A. Each student will be assessed conducting a patient interview.</p> <p>B. The assessment will be videotaped and the student is also expected to complete a self-assessment and turn this in to the instructor.</p>	
11	<p>Helping Patients Manage Therapeutic Regimens & Medication Safety</p> <p>A. Reading: Helping Patients Manage Therapeutic Regimens and Medication Safety and Communication skills</p> <p>B. Instructor will role play demonstrating ineffective and effective techniques to manage therapeutic regimens/medication safety issues</p>	
12	<p>Motivational Interviewing</p> <p>A. Pre-class activity: View Motivational Interviewing Materials available from Bruce Berger, Ph.D.</p> <p>B. Discuss: Motivational Interviewing</p>	
13	<p>Motivational Interviewing</p> <p>A. Pre-class activity: Practice Motivational Interviewing role-playing with peers</p> <p>B. During class: Students and instructors will role play demonstrating ineffective and effective techniques to manage therapeutic regimens/medication safety issues – students will critique and discuss</p>	
14	<p>Assessment - Motivational Interviewing</p> <p>A. Each student will be assessed conducting a patient encounter that involves motivational interviewing.</p> <p>B. The assessment will be video-taped, and the student is also expected to complete a self-assessment and turn this in to the instructor.</p>	
15	Exam 2	



Level 7

1- Principles of Self-Care & Medication Therapy Management

Course Title	Principles of Self-Care & Medication Therapy Management			مبادئ الرعاية الذاتية وإدارة العلاج الدوائي		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	404	2	2	-	-
Level/year	7 th Level / 4 th Year					
Prerequisites	-					
Co-requisites	-					
Course Description:						
<p>An introduction to patient self-care for common minor illness including how to triage to a physician when symptoms require more than self-care. Principles of Medication Therapy Management will also be introduced.</p>						
Topics:						
No	List of Topics					
1	<p>How to Approach the Patient who seeks self-care Assignment: Each student is to develop an OTC Formulary. This formulary will outline recommendations for pediatric patients and adult patients for each of the following: Nausea and vomiting, weight loss (adults only), nutritional supplements, acne, insect bites, contact dermatitis, burns, sunburn/sunscreens, wound care, GERD and PUD, analgesics, pain and fever cough and cold, antihistamines, otitis externa, ear wax removal The formulary is to be submitted during the last week of classes.</p>					
2	Adults: Nausea and vomiting; eating disorders, otitis externa, ear wax removal					
3	Pediatrics: Management of the patient with nausea, vomiting, and diarrhea, pediatric nutrition					
4	Dermatologic disorders – Acne, insect bites, contact dermatitis, burns, Sunburn/sunscreens, wound Care					
5	Ophthalmology disorders – Dry eye, allergic conjunctivitis, viral conjunctivitis, corneal edema					
6	PPIs and H2 blockers (Medicinal Chemistry and Pharmacology) GERD & PUD					
7	Heartburn/GERD					
8	Exam 1					
9	Analgesics – Medicinal Chemistry and Pharmacology					
10	Pain and fever (pediatric and adult)					
11	Cough and Cold (pediatric and adult)					



12	Antihistamines – Medicinal Chemistry and Pharmacology Allergies and Allergic Rhinitis	
13	Smoking cessation and nicotine replacement therapy	
14	Medication Therapy Management – Introduction & Establishing a Practice	
15	Exam 2	



2- Integrated Pharmacotherapy (2)

Course Title	Integrated Pharmacotherapy (2)			العلاج الدوائي المتكامل (٢)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	321	3	3	-	-
Level/year	7 th Level / 4 th Year					
Prerequisites	CPP 320					
Co-requisites	CPP 312					

Course Description:

This course prepares students to assess and manage the pharmacotherapy of patients with common infectious diseases. Focuses on solving problems that require application of the pharmacology and medicinal chemistry of antibiotics. Uses a team-based learning format to develop the student's ability to function as a team-member.

Topics:

No	List of Topics
1	Introduction: Review of Syllabus General Principles of Antimicrobial Therapy Cell Wall Inhibitors <i>*Medicinal Chemistry</i>
	Introduction: Review of Syllabus General Principles of Antimicrobial Therapy Cell Wall Inhibitors <i>* Pharmacology</i>
2	Protein Synthesis Inhibitors <i>* Medicinal Chemistry</i>
	Protein Synthesis Inhibitors <i>* Pharmacology</i>
3	Nucleic Acid Inhibitors / glycopeptide <i>* Medicinal Chemistry</i>
	Nucleic Acid Inhibitors / glycopeptide <i>* Pharmacology</i>
4	Other Antibiotics (Folate, Membrane Agents) <i>* Medicinal Chemistry</i>
	Other Antibiotics (Folate, Membrane Agents) <i>* Pharmacology</i>
5	Introduction to Antimicrobial Stewardship/Antimicrobial regimen selection
	Skin and Soft Tissue infection
6	Surgical Prophylaxis
	Bone and joint infections
7	Upper respiratory infections/ Otitis Media
8	Brucellosis
	Exam 1
9	Lower respiratory infections
	Tuberculosis
10	Endocarditis/Rheumatic Fever
11	GI/Abdominal infections including <i>H. Pylori</i>



12	Meningitis
	Urinary Tract Infection
13	Sepsis / Vaccine
14	Sexually Transmitted Diseases
15	Malaria
	Exam 2



3- Drug Information and Literature Evaluation

Course Title	Drug Information and Literature Evaluation			المعلومات الدوائية وتقييم البحوث المنشورة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	405	3	2	2	-
Level/year	7 th Level / 4 th Year					
Prerequisites	CPP 303					
Co-requisites	-					

Course Description:

This course explores the fundamental aspects of drug information. An introduction to retrieval and evaluation of drug literature. Emphasis is placed on how to interpret statistical results that are reported in pharmacy and medical articles.

Topics:

No	List of Topics
1	Review of Syllabus and assignments Introduction to the Concept of medication information
2	Modified Systematic approach to Answering Question Formulating Effective Responses and Recommendations
3	Drug information Resources – I
4	Drug information Resources – II
5	Poison Information resources/herbal resources
6	How to Access Literature Resources: Demonstration on how to use the various electronic resources, How to conduct a literature search (Articles for discussion)
7	Adverse Drug Reaction Reporting Pre-class Reading In-class activities: Exercises available in book and for faculty, supplemental exercises developed by instructor
8	Exam 1
9	Pharmacy and Therapeutics Committee Pre-class Reading In-class activities: Exercises available in book and for faculty; supplemental exercises developed by instructor
10	Drug Evaluation Monographs Pre-class Reading In-class activities: Exercises available in book and for faculty; supplemental exercises developed by instructor
11	Analyzing Research Question about survival Pre-class Reading In-class activities: Exercises available in book and for faculty;



	supplemental exercises developed by instructor	
12	Statistical Methods for Multiple Variables Pre-class Reading In-class activities: Exercises available in book and for faculty; supplemental exercises developed by instructor. Instructor will provide a synopsis about Survey research	
13	Clinical Application of Statistical Analysis Pre-class Reading In-class activities: Exercises available in book and for faculty; supplemental exercises developed by instructor	
14	Clinical Application of Statistical Analysis II Pre-class Reading In-class activities: Exercises available in book and for faculty. supplemental exercises developed by instructor	
15	Exam 2	



4- Principles of Pharmacoepidemiology & Pharmacoeconomics of medicine

Course Title	Principles of Pharmacoepidemiology & Pharmacoeconomics of medicine			مبادئ علم الأوبئة الصيدلانية واقتصاديات الدواء		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	408	3	3	-	-
Level/year	7 th Level / 4 th Year					
Prerequisites	CPP 303					
Co-requisites	-					

Course Description:

An introduction to Pharmacoepidemiology and Pharmacoeconomics. Emphasis is placed on how optimally use and optimize outcomes of medications.

Topics:

No	List of Topics
1	Review course syllabus Introduction to Pharmacoeconomics
2	Measuring and Estimating Costs Cost Minimization Analysis
3	Cost Effectiveness Analysis
4	Utility Analysis Cost
5	Benefit Analysis Cost
6	Health-Related Quality of life
7	Pharmacoeconomic Analysis of Pharmacy Service
8	Exam 1
9	Introduction to epidemiology
10	Medical Surveillance and Outbreaks of Disease
11	Study Designs
12	Data Identification and Analysis
13	Risk assessment
14	Post-Marketing Surveillance
15	Exam 2



5- Toxicology

Course Title	Toxicology			علم السموم																
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours																
				LT	LB	TR														
	PHS	411	2	2	-	-														
Level/year	7 th Level / 4 th Year																			
Prerequisites	PHS 310																			
Co-requisites	-																			
Course Description: <p>This course is designed to develop an understanding of the principles and mechanisms of toxicology, as well as management of the common toxicities. Furthermore, it covers important toxicants such as environmental pollutants, heavy metals and pesticides. Also, it provides extensive coverage of serious consequences of exposure to drugs and chemicals for both organ specific and non-organ-directed toxicity (hypersensitivity, carcinogenicity, mutagenicity, and teratogenicity), as well as consequences of drug-interactions. This course provides coverages of clinical pharmacy applications of toxicity.</p>																				
Topics:																				
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7	Exam 1
7-8	Toxic agents: Pesticides poisoning Heavy metals poisoning such as lead, mercury and arsenic poisoning. Toxic effect of radiation
9	Drug interactions mediated toxicity (drug-drug interactions, drug-food interactions, drug-herb interactions)
10	Drug-induced allergies and hypersensitivity Iatrogenic diseases
	Exam 2
11	Environmental toxicology (Air pollution....etc)
12	Application of Toxicology: Analytical and Forensic toxicology
13	Application of Toxicology: Clinical toxicology
14	Application of Toxicology: Occupation Toxicology Regulatory Toxicology
15	Application of Toxicology case studies
16	Final Exam



6- Integrated Patient Care Laboratory (2)

Course Title	Integrated Patient Care Laboratory (2)			مختبر الرعاية المتكاملة للمرضى (٢)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	312	2	-	4	-
Level/year	7 th Level / 4 th Year					
Prerequisites	CPP 311					
Co-requisites	CPP 321, CPP 404, CPP 405					

Course Description:

Laboratory course which includes patient simulations that require the student to apply what has been learned during other courses. Simulations focus on providing patient-centered care, the drug dispensing process, promoting health and wellness, and professionalism.

Topics:

No	List of Topics
1	Introduction to the course & Approach to patient
2	Credibility of internet healthcare resources and SOAP Note Writing
3	Pain and Thermometers
4	Contact Dermatitis
5	Antimicrobial Overview & Adult Nausea/Vomiting OTC Cases
6	Skin and Soft Tissue Infections (SSTIs) and Sunscreens
7	Acute Otitis Media, Cough and Cold
8	Formative OSCE
9	Pneumonia, OTC allergies and SOAP Note Case Discussion
10	Infectious Endocarditis
11	Gastrointestinal Conditions and GI Infections
12	Meningitis, osteomyelitis, OTC acne
13	Otic Conditions & Sepsis
14	Sexually Transmitted Diseases (STDs)
15	Summative OSCE



7- Pharmacy Practice Experience 1 (Community Practice)

Course Title	Pharmacy Practice Experience 1 (Community Practice)			الممارسة الصيدلانية ١ (صيدليات المجتمع)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	430	2	-	-	104
Level/year	7 th Level / 4 th Year					
Prerequisites	-					
Co-requisites	-					
Course Description:						
<p>The Introductory Pharmacy Practice Experience (IPPE) community practice is designed to equip pharmacy students with essential skills in community pharmacy services and medication therapy management through field training in community pharmacies. This experience aims to foster professionalism, enhance communication, and develop core competencies like accurate prescription interpretation, preparation, and problem-solving. By engaging in patient care activities and reflecting on their experiences, students gain a comprehensive understanding of their future roles and responsibilities in community pharmacy practice.</p>						
Dates and times allocation of field experience activities						
<ul style="list-style-type: none">• Number of weeks: (13) week, One day per week (8 am - 4 pm)• Number of hours: (104) training hour						
<p>The community service and medication therapy management practice allow pharmacy students to be able to:</p>						
<ol style="list-style-type: none">1. Participate in patient care activities in the community pharmacy setting.2. Demonstrate professionalism in all daily activities.3- Demonstrate the following in a community practice setting:<ul style="list-style-type: none">• Interpret prescriptions for completeness and accuracy.• Prepare, fill, and document prescriptions accurately.• Understand the process of identifying, resolving, and preventing medication related problems.• Communicate with patients or health professionals to confirm or clarify prescription information.• Use appropriate references available in the pharmacy to counsel patients or answer drug information questions.• Adhere to the pharmacy regulations.• Make ethical decisions when interacting with patients and colleagues.• Respect the confidentiality of patients.• Cooperate with the pharmacy personnel when completing assigned duties.						



4. Reflect on experience to identify personal strengths and areas for improvement in future learning activities.



Level 8

1-Integrated Pharmacotherapy 3

Course Title	Integrated Pharmacotherapy 3			العلاج الدوائي المتكامل (٣)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	322	3	3	-	-
Level/year	8 th level / 4 th year					
Prerequisites	CPP 321					
Co-requisites	CPP 423, CPP 413					

Course Description:

Prepare students to assess and manage the pharmacotherapy of endocrine disorders and respiratory disorders. Focuses on solving problems that require applying the pharmacology and medicinal chemistry of drugs acting on the endocrine and respiratory systems. Uses a team-based learning format to develop the student's ability to function as a team member.

Topics:

No.	List of Topics
1	Oral and injectable antidiabetic agents * (<i>Medicinal Chemistry</i>)
	Oral and injectable antidiabetic agents * (<i>Pharmacology</i>)
	Oral and injectable antidiabetic agents Part II* (<i>Pharmacology</i>)
2	Diabetes Mellitus management Part I
	Diabetes Mellitus management Part II
3	Thyroid and antithyroid agents * (<i>Medicinal Chemistry</i>)
	Thyroid and antithyroid agents * (<i>Pharmacology</i>)
	Thyroid disorder management
4	Exam 1
	Glucocorticoids and mineralocorticoids * (<i>Medicinal Chemistry</i>)
	Glucocorticoids and mineralocorticoids * (<i>Pharmacology</i>)
5	Adrenal disorder management
	Adrenergic agonist, Cholinergic agonists and antagonists * (<i>Medicinal Chemistry</i>)
	Adrenergic agonists Cholinergic agonists and antagonists * (<i>Pharmacology</i>)
6	Steroid Anti-inflammatory agents, Antileukotrienes, and Theophylline * (<i>Medicinal Chemistry</i>)
	Steroid Anti-inflammatory agents, Antileukotrienes, and Theophylline * (<i>Pharmacology</i>)
	Asthma and COPD management Part I
7	Asthma and COPD management Part II
	Exam 2



2- Integrated Pharmacotherapy 4

Course Title	Integrated Pharmacotherapy 4			العلاج الدوائي المتكامل (٤)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	323	3	3	-	-
Level/year	8 th level / 4 th year					
Prerequisites	CPP 321					
Co-requisites	CPP 422, CPP 413					

Course Description:

Prepares students to assess and manage the pharmacotherapy of common disorders seen in special population including women, men, infants, children and overweight/ obese population in the acute and primary care setting. Also focuses on solving problems that require application of the pharmacology and medicinal chemistry of drugs used to manage women, men, geriatric, pediatrics disorders. Uses a team-based learning format to develop the student's ability to function as a team-member.

Topics:

No	List of Topics
1	Estrogen and progesterone, Dysmenorrhea and premenstrual syndrome, Endometriosis / PCOS and infertility agent, Oxytocic's and tocolytics* (<i>Medicinal Chemistry</i>)
	Estrogen and progesterone, Dysmenorrhea and premenstrual syndrome, Endometriosis / PCOS and infertility agent, Contraception, Oxytocic's and tocolytics, STH and prolactin* * (<i>Pharmacology</i>)
2	Women's Health 1: Introduction to Women's Health (Preventative health; Vaginal and Menstrual disorders); Pregnancy Planning
	Pregnancy overview (Definitions, Factors influencing fetus development, main sources of DI relevant to pregnancy, physiologic changes during pregnancy, Conditions prevalent in pregnancy e.g. Morning Sickness, Heartburn, constipation, Hemorrhoids, UTI, Headache, Coagulation Disorders , Pregnancy-Induced Hypertension, Preterm Labor , Induction of Labor , Labor-analgesia)
3	Menopause Hormone Replacement Therapy Incontinence therapy *(<i>Pharmacology</i>)
	Menopause Management
4	Obesity and overweight
	Exam I
5	Men's Health (Preventative health; Erectile dysfunction, BPH, urinary incontinence) * (<i>Medicinal Chemistry</i>)
	Men's Health (Preventative health; Erectile dysfunction, BPH, urinary incontinence)* (<i>Pharmacology</i>)



		Men's Health (Preventative health, Erectile dysfunction, BPH)	
6		Pediatrics: Assessment of health and growth/development, obesity, preventative health	
		Geriatrics Age-related inappropriate medication use, Falls and fall-risk-increasing drugs, Geriatric drug dosing and monitoring	
7		Geriatrics related disorders: Glaucoma and urinary incontinences	
		Exam 2	



3- Principles of Pharmacy Management and Marketing

Course Title	Principles of Pharmacy Management and Marketing			مبادئ الإدارة والتسويق في مهنة الصيدلة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	406	2	2	-	-
Level/year	8 th level / 4 th year					
Prerequisites	-					
Co-requisites	-					

Course Description:

An introduction to the management of operations, personnel, and finances of a pharmacy practice.

Topics:

No	List of Topics
1	Introduction: Review to the course of syllabus and Importance of Pharmacy management in Pharmacy Practice
2	Managing operations: strategic planning
3	Managing operations: business planning
4	Managing operations: general operations management
5	Managing operations: managing technology and pharmacy information systems
6	Managing operations: CQI in pharmacy operations
7	Exam 1
8	Managing people: organizational structure & behavior
9	Managing people: human resources management functions
10	Managing people: performance appraisal systems & contemporary workplace issues
11	Managing people: Marketing, Market segmentation, customer service, Product marketing and pricing
12	Managing people: time management/organizational skills
13	Managing people: leadership in pharmacy
14	Managing money: basic accounting and how to use financial reports
15	Exam 2



4- Principles of Medication Safety

Course Title	Principles of Medication Safety			مبادئ السلامة الدوائية																		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours																		
				LT	LB	TR																
	CPP	409	2	2	-	-																
Level/year	8 th level / 4 th year																					
Prerequisites	-																					
Co-requisites	-																					
Course Description:																						
<p>Introduction to the causes of medication errors and how they can be prevented. Prepares the students to appropriately handle situations involving a medication error and perform a root cause analysis and failure mode effect analysis.</p>																						
Topics:																						
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7	Exam 1																					



8	Preventing Prescribing Errors <ul style="list-style-type: none">• Pre-reading• Case Study discussion
9	Preventing Dispensing Errors <ul style="list-style-type: none">• Pre-reading• Case Study discussion
10	Preventing Drug Administration Errors <ul style="list-style-type: none">• Pre-reading• Case Study discussion
11	Preventing Medication Errors Related to Drug Delivery Devices <ul style="list-style-type: none">• Pre-reading• Case Study discussion
12	The Patient's Role in Preventing Medication Errors <ul style="list-style-type: none">• Pre-reading• Video: Patients Play a Vital Role in Patient Safety• Case Study discussion
13	Reducing Risks and Creating a Just Culture of Safety – Part 1 <ul style="list-style-type: none">• Pre-readings• Demonstration – Medication error reporting systems• Case Study and Role Play – Disclosing errors to families
14	Reducing Risks and Creating a Just Culture of Safety – Part 2 <ul style="list-style-type: none">• Pre-reading• Video: Reducing Medication Errors through Failure Mode and Effects Analysis• Case study: Failure Mode and Effects Analysis
15	Exam 2



5- Principles of Evidence-Based Practice

Course Title	Principles of Evidence-Based Practice			مبادئ الممارسات المهنية المبينة على الأدلة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	407	2	1	2	-
Level/year	8 th Level / 4 th year					
Prerequisites	CPP 405					
Co-requisites	-					

Course Description:

An introduction to evidenced based medicine and pharmacy. Emphasis is placed on how to interpret literature that is reported in pharmacy and medical articles.

Topics:

No	List of Topics
1	Introduction: Review of Syllabus • Pre-readings • Discussion: What is Evidence-based Medicine? (Importance for patient care; and important tool for lifelong learning of the practitioner) • Review steps outlined in JAMA Evidence website
2	Getting Started • Pre-readings • Case Studies: What is the Question? (Case will present a scenario and students must establish the question that needs to be answered) • Demonstration: Finding the Evidence (provide more in-depth information about how to search the literature)
3	Why Results Mislead • Pre-readings • Case Studies: Use 2 articles from the literature were bias and random error have to be considered
4	Evaluating an Article about Therapy • Pre-readings • Discussion: Review randomized trials; How to review/critique an article.
5	Treatment and Risk (Odds Ratio) • Pre-readings • Case Studies: Use 2 articles that involve analysis of risk • Case Studies: Use 2 articles that require interpretation of Odds Ratio
6	Confidence Intervals • Pre-readings • Case Studies: Use 2 articles that require interpretation of confidence articles
7	Randomized Trials Stopped Early for Benefit • Pre-readings



	• Case Studies: Use 2 articles that involved stopping a randomized trial
8	Exam 1
9	Intention to Treat • Pre-readings • Case Studies: Use 2 articles that require interpretation of Intention to Treat data
10	Systematic review and meta-analysis Case Studies: Use 2 articles that require interpretation of pooled estimates in meta-analysis.
11	Number Needed to Treat • Pre-readings • Case Studies: Use 2 articles that require interpretation of Number Needed to Treat
12	The role of clinical pharmacists in therapeutic Guidelines Development and implementation in clinical practice.
13	Applying Results to Individual Patients – Team Activity – Part 2 • Continuation of Prior Session • During Class – Case Studies: Review 2 of the 6 case studies; call on teams assigned this case to present their CAT and defend their work.
14	Applying Results to Individual Patients – Team Activity – Part 3 • Continuation of Prior Session • During Class – Case Studies: Review 2 of the 6 case studies; call on teams assigned this case to present their CAT and defend their work.
15	Exam 2



6- Integrated Patient Care Laboratory 3

Course Title	Integrated Patient Care Laboratory 3			مختبر الرعاية المتكاملة للمرضى (٣)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	413	2	-	4	-
Level/year	8 th level / 4 th year					
Prerequisites	CPP 312					
Co-requisites	CPP 422, CPP 423, CPP 407					

Course Description:

A laboratory course which includes patient simulations that require the student to apply what has been learned during other courses. Simulations focus on providing patient-centered care, the drug dispensing process, promoting health and wellness, and professionalism.

Topics:

No	List of Topics
1	Orientation & Approach to the Patient
2	Physical assessment review
3	Diabetes (1)
4	Diabetes (2)
5	Therapeutic Decision Making for Hypothyroidism and Hyperthyroidism
6	Therapeutic Decision Making of Adrenal Disorder and Steroid
7	Asthma and COPD
8	Formative OSCE
9	Nutrition
10	Tobacco Cessation
11	Pregnancy and Lactation
12	Women's Health
13	Benign Prostatic Hypertrophy (BPH) and Erectile Dysfunction (ED)
14	Drug Formulary
15	Summative OSCE



7- Pharmacy practice Experience 2 (Hospital practice)

Course Title	Pharmacy Practice Experience 2 (Hospital Practice)			الممارسة الصيدلانية ٢ (صيدلة المستشفيات)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	431	2	-	-	104
Level/year	8 th Level / 4 th Year					
Prerequisites	-					
Co-requisites	-					
Course Description:						
<p>The Introductory Pharmacy Practice Experience (IPPE) in-patient pharmacy experience aims to allow pharmacy students to describe the concept, procedure, and policy of the department's distribution systems including floor stock, unit dose, narcotic control in the inpatient area, and intravenous preparations.</p>						
Dates and times allocation of field experience activities						
<ul style="list-style-type: none">• Number of weeks: (13) week, One day per week (8 am - 4 pm)• Number of hours: (104) training hour						
The in-patient rotation allows pharmacy interns to achieve the following:						
<ol style="list-style-type: none">1. Describe the following for all medication administered to assigned patients:<ol style="list-style-type: none">a. Indications for use and appropriateness of therapy.b. Dosage and schedule.c. Routes of administration and precautions.d. Mechanism(s) of action.e. Alternative treatment available.f. Onset and duration of action.g. Therapeutic and toxic levels [if available].h. Adverse effects.i. Appropriate patient information.j. Formulation and compatibilities [I.V. admixtures].2. Intravenous Preparations goals:<ol style="list-style-type: none">a. Demonstrate an understanding of the USP 797 regulations.b. Prepare intravenous medication under supervision.c. Utilize aseptic techniques related to IV compounding.d. Calculate the quantity of active ingredient needed for each preparation.e. Identify the process of checking, labeling and storage of IV component.f. Utilize proper disposal techniques of Hazardous Material/Waste.3. Narcotics Medications goals (If applicable)						



- a. Summaries the laws and regulations of narcotic and controlled medication in Saudi Arabia.
 - b. Recognize storage of narcotic and control medication regulations.
 - c. Identify the process of prescribing narcotics and control drugs by nursing units, inpatient and outpatient.
 - d. Recognize the process of disposing of narcotic and control drugs.
 - e. Explain the process of dealing with expired and returned narcotics.
4. Demonstrate an understanding of workflow, policies and procedures related to in-patient pharmacy department.
 5. Participate in the process of preparing, labeling, dispensing.
 6. Demonstrate the ability to prioritize medication orders (i.e. STAT vs routine orders).
 7. Identify strategies to reduce medication errors and participate in their implementation (e.g. high alert and look alike sound alike (LASA) medication).
 8. Recognize medication storage regulations and how to access information related to appropriate medication storage.
 9. Acquire skill in managing non-formulary, shortage and withdrawn medication.
 10. Demonstrate an understanding of crash cart: medication list, layout, log sheet and pharmacist role.
 11. Outline the hospital medication distribution system.
 12. Practice prepackaging, compounding, calculation and extemporaneous preparation under supervision [if available].
 13. Demonstrate cultural competency in caring for patients and in interacting with other healthcare providers.
 14. Demonstrate professional attitudes and behaviors that characterize a professional pharmacist.



Level 9

1- Integrated pharmacotherapy (5)

Course Title	Integrated pharmacotherapy (5)			العلاج الدوائي المتكامل (٥)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	424	4	4	-	-
Level/year	9 th Level / 5 th Year					
Prerequisites	CPP 422, CPP 423					
Co-requisites	CPP 525, CPP 414					

Course Description:

Prepares students to assess and manage the pharmacotherapy of musculoskeletal and hematology disorders. This course will include osteoporosis, osteoarthritis, Rheumatoid arthritis, gouty arthritis, Multiple sclerosis, Anemia, and clinical pharmacogenetics. Focuses on solving problems that require application of the pharmacology and medicinal chemistry of drugs used to treat these disorders. Uses a case based and problem-based learning format to develop the student's ability to be a self-directed learner

Topics:

No	List of Topics
1	Parathyroid hormone, Bisphosphonates, mixed estrogen, Agonists/antagonists, teriparatide * <i>Medicinal chemistry</i>
	Parathyroid hormone, Bisphosphonates, mixed estrogen, Agonists/antagonists, teriparatide* <i>Pharmacology</i>
	Case-study :Osteoporosis: Collect and assess patient information
	Case-study :Osteoporosis: Develop the plan
2	Case-study :Osteoporosis: Follow-up the patient plan
	Salicylates & Oxicams* <i>Medicinal chemistry</i>
	Salicylates & Oxicams* <i>Pharmacology</i>
	Case-study :Osteoarthritis- Collect and assess patient information
3	Case-study :Osteoarthritis- Develop and Follow-up the patient plan
	Case-study :Rheumatoid arthritis - Collect and assess patient information
	Case-study : Rheumatoid arthritis - Develop and Follow-up the patient plan
	Exam 1
	Gout and hyperuricemia*
4	Gout and hyperuricemia*
	Case-study : Gout & hyperuricemia - Collect and assess patient information
	Case-study : Gout & hyperuricemia - Develop the plan
	Case-study : Gout & hyperuricemia - Follow-up the patient plan
	Multiple sclerosis * <i>Medicinal chemistry</i>



	Multiple sclerosis* <i>Pharmacology</i>
5	Case-study : Multiple sclerosis - Collect and assess patient information
	Case-study : Multiple sclerosis - Develop and Follow-up the patient plan
	Iron, Vitamin B12, EPO* <i>Medicinal chemistry</i>
	Iron, Vitamin B12, EPO* <i>Pharmacology</i>
6	Case-study : Anemia - Collect and assess patient information
	Case-study : Anemia - Develop and Follow-up the patient plan
	Case-study : Sickle cell Anemia - Collect and assess patient information
	Case-study : Sickle cell Anemia - Develop and Follow-up the patient plan
7	Introduction to Pharmacogenetics/Pharmacogenomics * <i>Pharmacology</i>
	Clinical Application of Pharmacogenomics* <i>Pharmacology</i>
	Clinical Pharmacogenomics
	Clinical Pharmacogenomics
	Exam 2



2-Integrated pharmacotherapy (6)

Course Title	Integrated pharmacotherapy (6)			العلاج الدوائي المتكامل (٦)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	525	4	4	-	-
Level/year	9 th Level / 5 th Year					
Prerequisites	CPP 422, CPP 423					
Co-requisites	CPP 424, CPP 414					

Course Description:

Prepares students to assess and manage the pharmacotherapy of complex cardiac diseases and disorders. Focuses on solving problems that require application of the pharmacology and medicinal chemistry of drugs affecting cardiac function. Uses a case – based and problem – based learning format to develop the student's ability to be a self–directed learner.

Topics:

No	List of Topics
1	Statins, fibrates, and Other hypolipidemics* <i>Medicinal Chemistry</i>
	Statins, fibrates, and Other hypolipidemics* <i>Pharmacology</i>
	Case study Dyslipidemia - Collect and Assess patient information
	Case study: Dyslipidemia - Develop therapeutic and follow-up plan
2	Antiplatelet drugs, Fibrinolytics and Nitrates* <i>Medicinal Chemistry</i>
	Antiplatelet drugs and Fibrinolytics* <i>Pharmacology</i>
	Case study: Stroke - Collect and Assess patient information
	Case study: Stroke - Develop therapeutic and follow-up plan
3	Beta – blockers and central acting agents * <i>Medicinal Chemistry</i>
	Nitrates used in chronic stable angina* <i>Pharmacology</i>
	Beta – blockers and central acting agents * <i>Pharmacology</i>
	Case Study: Ischemic heart disease– Collect and Assess patient information
	Case Study: Ischemic heart disease– Syndrome – Develop therapeutic and follow-up plan
4	Injectable and oral anticoagulants * <i>Medicinal Chemistry</i>
	Injectable and oral anticoagulants* <i>Pharmacology</i>
	Case study: Venous Thromboembolism- Collect and Assess patient information
	Case study: Venous Thromboembolism-Develop therapeutic and follow up plan
5	Exam 1
	Diuretics, vasodilators, and heart failure medications * <i>Medicinal Chemistry</i>
	Diuretics and Vasodilators and heart failure medications*
	Renin-Angiotensin Blockers and Calcium Channel Blockers* <i>Pharmacology</i>



	Case study: Hypertension- Collect and Assess patient information
	Case study: Hypertension-Develop therapeutic plan and follow-up plan
6	Case study: Heart failure- Collect and Assess patient information
	Case study: Heart Failure-Develop therapeutic and follow-up plan
	Case study: Heart Failure/ADHF- Develop therapeutic and follow-up plan
	Antiarrhythmics I: Class I, II, III, IV and others* <i>Medicinal Chemistry</i>
	Antiarrhythmics II: Class I, II, III, IV and others* * <i>Pharmacology</i>
7	Antiarrhythmics II: Class I, II, III, IV and others* * <i>Pharmacology</i>
	Case Study: Atrial fibrillation- Collect and Assess patient information
	Case Study: Atrial fibrillation – Develop a therapeutic plan
	Case Study: Atrial fibrillation – Follow up the patient plan
	Exam 2



3- Integrated Patient Care Laboratory 4

Course Title	Integrated Patient Care Laboratory 4			مختبر الرعاية المتكاملة للمرضى ٤		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	414	2	-	4	-
Level/year	9 th Level / 5 th Year					
Prerequisites	CPP 413					
Co-requisites	CPP 424, CPP 525					

Course Description:

A laboratory course which includes patient simulations that require the student to apply what has been learned during other courses. Simulations focus on providing patient-centered care, the drug dispensing process, promoting health and wellness, and professionalism.

Topics:

No	List of Topics	Contact Hours
1	Review of course syllabus + Vaccines	1+3
2	Osteoporosis	1+3
3	Osteoarthritis	1+3
4	Rheumatoid Arthritis	1+3
5	Anemia and Sickle cell Anemia	1+3
6	Gout and hyperuricemia	1+3
7	CPR	1+3
8	Formative OSCE	3
9	Dyslipidemia	1+3
10	Stroke & DOACs	1+3
11	Anticoagulation Management	1+3
12	Hypertension and hypertension crisis	1+3
13	Acute coronary syndrome	1+3
14	Heart failure and Arrhythmia	1+3
15	Summative OSCE	3



4- Health Informatics

Course Title	Health Informatics			المعلوماتية الصحية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	500	2	2	-	-
Level/year	9 th Level / 5 th Year					
Prerequisites	-					
Co-requisites	-					

Course Description:

This course is designed to provide the student with knowledge about advanced computer technology and its application in the healthcare field. It will also introduce the student to technological innovations in healthcare informatics as a discipline, clinical decision-support systems, medical expert systems, telemedicine, tele pharmacy and patient engagement with health applications.

The course will emphasize the use of computerized health information retrieval systems, patient-related programs and data manipulation software for application in profession-related tasks.

Topics:

No	List of Topics
1	Introduction to Health Informatics: definition of health informatics, fundamental information in health informatics
2	Information technology for the delivery of healthcare
3	Management of information in health care organization
4	Patient-Centered Care Systems
5	Electronic Health Records
6	Clinical Decision support systems (CDSS)
7	Consumer Informatics Case Study
8	Exam 1
9	Computerized Physician Order Entry (CPOE) Case Study
10	Public health informatics Case Study
11	Introduction to Pharmaceutical bioinformatics
12	Enhanced ePatient technology, telehealth, and telepharmacy Case Study
13	Future directions and research in health informatics
14	Student Projects submission
15	Exam 2



5- Compounding & IV Admixtures Services

Course Title	Compounding & IV Admixtures Services			خدمات تركيب محاليل الحقن الوريدية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	524	3	2	2	-
Level/year	9 th Level / 5 th Year					
Prerequisites	PHS 220					
Co-requisites	-					

Course Description:

Compounding & IV Admixtures Services course describes basic and applied principles of sterile compounding for the preparation of IV admixtures and other parenteral products. Principles and design of an IV Admixtures and Compounding Service.

Topics:

No	List of Topics
1	Introduction and Course Scope; Review of Fundamental Calculations – Parenterals Parenteral preparations. •Parenteral routes. •Types of injections. •Solvents and vehicles. •Non-aqueous vehicles •Additives •Methods of sterilisation •Small volume parenterals •Large volume parenterals •Special considerations & other injectable products
2	Mechanics and Physical Manipulations (laminar flow hoods handling)
3	Mechanics and Physical Manipulations (syringes, needles, bags) Mechanics and Physical Manipulations (ampoules, filters, straws)
4	Critical References for IV Admixtures
5	Patient Safety Considerations in IV/Compounding; Typical Errors
6	Exam 1 Powder Reconstitution Principles: Fractional Saline.
7	Powder Reconstitution Principles: Assorted Products.
7-8	Product Compatibility/Stability
9	Preparation of Solutions for simple and complex Infusions-Theoretical - Adult
10	Preparation of Solutions for simple and complex Infusions-Theoretical – Pediatric
11	Hyperalimentation and Parenteral Nutrition



12	Exam 2
	Cytotoxics, Media Fill, Assorted Products-Theoretical (case studies)
13	Design of an IV Admixtures & Compounding Service: Physical Facilities.
14	Design of an IV Admixtures & Compounding Service: Maintaining Inventory, Business Models & Personnel.
15	Application/oral presentation
16	Final Exam



Elective Courses: the student choose one from the following three courses

1- Thermodynamics Pharmacy

Course Title	Thermodynamics Pharmacy			الديناميكا الحرارية للصيدلة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	527	3	2	2	-
Level/year	9 th Level / 5 th Year					
Prerequisites	PHS 220					
Co-requisites	-					

Course Description:

An introduction to the chemical interactions that take place in pharmaceutical system.

Topics:

No	List of Topics
1	Energy and the first law of thermodynamics
2	The entropy concept, second law of thermodynamics
3	Free energy, properties and chemical potential
4	Equilibrium, conditions, physical processes, chemical equilibrium
5	Introduction to physical processes
	Exam 1
6	Phase Transformations, pure substances, multi-component systems
7	Solutions of nonelectrolytes, ideal and non ideal solutions, partitioning between liquid phases
8	Solutions of Electrolytes, coulombic interactions and ionic dissociation, mean ionic activity and activity coefficients
9	Colligative Properties
10	Solubility, ideal solutions, slightly soluble salts, nonelectrolytes
	Exam 2
11	Surfaces and interfaces, adsorption and thermodynamic properties
12	Acid-Base equilibria, pH, titrations, non-aqueous acid base behaviour
13	Oxidation-reduction reactions, electrochemical cells
14	pH and ion-selective membrane electrodes
15	Noncovalent binding equilibria, binding models, measurement of binding constants
16	Final Exam



2- Cosmetic Preparations

Course Title	Cosmetic Preparations			المستحضرات التجميلية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	525	3	2	2	-
Level/year	9 th Level / 5 th Year					
Prerequisites	PHS 322					
Co-requisites	-					

Course Description:

This course attempts to provide the students with the basic and practical experience in the name, structure and function of active ingredients used in cosmetic products. This course will focus on the structure and morphology of skin, hair, nail and teeth

Topics:

No	List of Topics
1	Introduction to cosmetics. Review of Hair and Skin structure
2	Hair dyes formulations
3	Hair shampoos and conditioners formulations
4	Hair lacquers, sprays and lotions formulations
5	Waving and relaxing preparations formulations
	Exam 1
6	Moisturizing, Protective, Cleansers, Tonics Preparations, Cleansing agents
7	Sunscreen, suntan and anti-sunburn preparations
8	Depilatories and Antiperspirants and deodorants
9	Aging physiology and antiaging preparations Shaving preparations
10	Manicure preparations
	Exam 2
11	Dental Products, Dentifrice, Mouthwashes
12	Face Powders and make-up Colored Make-up preparation: Lipstick and Rouge Eye Makeup
13	Baby Products and perfumes
14	Cosmetics regulations, registration, ethics and Quality control tests for cosmetics
15	Students Presentations
16	Final Exam



3-Advanced Pharmacokinetics and Pharmacodynamics

Course Title	Advanced Pharmacokinetics and Pharmacodynamics			ديناميكية وحركية الدواء المتقدمة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	PHS	526	3	2	2	-
Level/year	9 th Level / 5 th Year					
Prerequisites	PHS 323					
Co-requisites	-					

Course Description:

In-depth study of the mathematical equations involved in compartmental analysis of Pharmacokinetic and Pharmacodynamics data, their assumptions, limit and fitting of models to data.

Topics:

No	List of Topics
1	General principles including: basic concepts, why model pharmacokinetics data? one compartment model (IV bolus, and constant rate infusion)
2-3	Extravascular administration, estimation of absorption parameters, absorption from multiple sites
4-5	Multi-compartment models Clearance concept
5	Exam 1
6	Renal Clearance estimation, capacity limited and time limited clearance, turnover concepts, metabolic clearance, formation and elimination clearance.
7	Minimizing variation in data on PK parameters and nonlinear regression, importance of quality controls and specificity/sensitivity in assays, goodness of fit.
8	Interspecies scaling of data Introduction to pharmacodynamics concepts.
9	Linear and log-linear model, Hill modification. Competitive and non-competitive interactions antagonism. Kinetics of drug response-reversible and irreversible models.
10	Exam 2
10	Dose-Response-time models, Bayesian kinetics and NONMEM approaches.
11	Population pharmacokinetics
12	Transporters in vitro and in vivo systems, models to study transport Student literature research project I
13	Stereospecificity and effects on pharmacokinetic and pharmacodynamics models of ADME processes.



	Student literature research project II
14	Drug metabolism studies, techniques, limits, in vitro and in vivo predictions, problems, predictions. Student literature research project III
15	Pharmacogenetic influences, genetic testing cost and re-use, biotechnology products, elimination assessment.
	Final Exam



Level 10

1- Integrated pharmacotherapy (7)

Course Title	Integrated pharmacotherapy (7)			العلاج الدوائي المتكامل (٧)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	424	4	4	-	-
Level/year	10 th Level /5 th year					
Prerequisites	CPP 424, CPP 525					
Co-requisites	CPP 527, CPP 515					

Course Description:

Prepares students to assess and manage the pharmacotherapy of neurologic and psychiatric disorders. Focuses on solving problems that require application of the pharmacology and medicinal chemistry of drugs acting on the central nervous system.

Uses a case-based and problem-based learning format to develop the student's ability to be a self-directed learner.

Topics:

No	List of Topics
1	Introduction: review of syllabus
	Anticonvulsants (NMDA, GABA), Anticonvulsants (Barbiturates, Hydantoin, others) * <i>Medicinal Chemistry</i>
	Anticonvulsants (NMDA, GABA), Anticonvulsants (Barbiturates, Hydantoin, others) * <i>Pharmacology</i>
	Case study: management of the patient with Status Epileptics & Epilepsy :collect and assess patient information
2	Case study: management of the patient with Status Epileptics & Epilepsy develop & follow up the plan
	Anti-anxiety agents, hypnotic and antidepressants * <i>Medicinal Chemistry</i>
	Anti-anxiety agents, hypnotic and antidepressants * <i>Pharmacology</i>
	Case study: Depression- collect and assess patient information
3	Case study: Depression- develop & follow up the plan
	Case Study: GAD- Collect and assess the patient
	Case Study: GAD- Develop the plan and follow up the plan
	Antipsychotics and mood stabilizers* <i>Medicinal chemistry</i>
4	Antipsychotics and mood stabilizers * <i>Pharmacology</i>
	Case Study: Schizophrenia – Collect and assess patient information
	Case Study: Schizophrenia – follow up the plan
	Case Study: Schizophrenia – Collect and assess patient information
	Exam 1
Case Study: Bipolar –Collect and assess	
Case Study: Bipolar –Develop the plan & follow up the patient	



5	Case study: alcohol use disorder and Substance use disorders- Collect and assess patient information-develop the plan
	Case study: alcohol use disorder and Substance use disorders- follow up the effectiveness of the plan
	Triptans & CGRP inhibitors * <i>Medicinal chemistry</i>
	Triptans & CGRP inhibitors * <i>Pharmacology</i>
6	Case Study: Headache– Collect and assess patient information
	Case Study: Headache– develop the plan & follow up
	Cholinesterase inhibitors and antigitamatergics* <i>Medicinal chemistry</i>
	Cholinesterase inhibitors and antigitamatergics* <i>Pharmacology</i>
	Case studies Alzheimer’s disease –collect and assess patient information and develop the plan
7	Case studies Alzheimer’s disease-follow up the plan
	Dopamine receptor theory and dopaminergic agents* <i>Medicinal chemistry</i>
	Dopamine receptor theory and dopaminergic agents* <i>Pharmacology</i>
	Case study: Parkinson’s disease –collect and assess patient information and develop the plan
	Case study: Parkinson’s disease follow up the plan
	Exam 2



2- Integrated pharmacotherapy (8)

Course Title	Integrated pharmacotherapy (8)			العلاج الدوائي المتكامل (٨)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	527	4	4	-	-
Level/year	10 th Level /5 th year					
Prerequisites	CPP 424, CPP 525					
Co-requisites	CPP 526, CPP 515					

Course Description:

This course prepares students to assess and manage the pharmacotherapy of diseases causing or caused by suppressed immunity. Also focuses on complex disorders encountered in the ICU setting. Focuses on solving problems that require application of the pharmacology and medicinal chemistry of drugs classes including antivirals, antifungals, immunosuppressant agents, and chemotherapeutic agents. Used a case-based and problem-based learning format to develop the students' ability to be a self-directed learner.

Topics:

No	List of Topics
1	Syllabus + Pharmacology of Anti-cancer drugs*
	Pharmacology of Anti-cancer drugs*
	Medicinal Chemistry and Pharmacology of Anti-cancer drugs*
	Case Study: Management of the cancer patient – Collect and assess patient information Nausea/ vomiting, chronic pain management, neutropenia, chronic anemia
2	Case Study: Management of the cancer patient – Develop a therapeutic and follow up therapeutic plan Plan Nausea/ vomiting, chronic pain management, neutropenia, chronic anemia
	Case Studies: Cancer patients - Collect and assess patient information Breast, Ovarian, Prostate
	Case Studies: Cancer patients - Develop a therapeutic plan Breast, Ovarian, Prostate
	Case Studies: Cancer patients - Follow up the patient plan Breast, Ovarian, Prostate
3	Case Studies: Cancer patients - Collect and assess patient information. Colorectal, Lung, Acute leukemia
	Case Studies: Cancer patients - Develop a therapeutic plan Colorectal, Lung, Acute leukemia
	Case Studies: Cancer patients - Follow up the patient plan Colorectal, Lung, Acute leukemia
4	Clinical Immunology overview



	Common Skin Disorders
	Inflammatory Bowel Disease
	Medicinal Chemistry and Pharmacology of antifungal drugs*
	Exam 1
5	Case study: patient with a systemic mycotic infection – Collect and assess patient information
	Case study: patient with a systemic mycotic infection – Develop a therapeutic plan and Follow up the patient plan
	Review medical virology / Medicinal Chemistry and Pharmacology of Antivirals*
	Case Study: viral infection (HIV) – Collect and assess patient information
6	Case Study: viral infection (HIV) – Develop a therapeutic plan and Follow up the patient plan
	Case Study: viral infection (viral hepatitis) – Collect and assess patient information
	Case Study: viral infection (viral hepatitis) – Develop a therapeutic plan and Follow up the patient plan
	Case Study: transplant patient – Collect and assess patient
7	Case Study: transplant patient – Develop a therapeutic plan and Follow up the patient plan
	Case Study: Critical Care Patient – Collect and assess patient
	Case Study: Critical Care Patient – Develop a therapeutic plan
	Case Study: Critical Care Patient – Follow up the patient plan
	Exam 2



3- Integrated Patient Care Laboratory (5)

Course Title	Integrated Patient Care Laboratory (5)			مختبر الرعاية المتكاملة للمرضى (٥)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	515	2	-	4	-
Level/year	10 th level / 5 th year					
Prerequisites	CPP 414					
Co-requisites	CPP 526 CPP 527					

Course Description:

A laboratory course which includes patient simulations that require the student to apply what has been learned during other courses. Simulations focus on providing patient-centered care, the drug dispensing process, promoting health and wellness, and professionalism.

Topics:

No	List of Topics
1	Orientation & Life Long Learning
2	Epilepsy
3	Depression
4	Anxiety
5	Schizophrenia
6	Strengths Based Leadership (research interest and scientific communities)
7	Alzheimer's disease/ Parkinson's disease
8	Formative OSCE
9	Therapeutic Decision Making for Chemotherapy-Induced Nausea and Vomiting (CINV)
10	Opioids
11	Pain Management
12	Mycotic infection
13	Human immunodeficiency virus (HIV)
14	Therapeutic Decision Making for HCV
15	Summative OSCE



4- Research Project

Course Title	Research Project			مشروع بحثي		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	501	3	1	-	4
Level/year	10 th Level /5 th year					
Prerequisites	CPP 303, CPP 405, CPP 407					
Co-requisites	-					

Course Description:

This course is designed to provide the student with knowledge and skills required for their research projects. In this course students will gain more intellectual skills for designing, planning, and conducting a research project. In addition, they will be introduced to principles of human research bioethics, and some advanced computer technology for data collection and statistical analysis.

Topics:

No	List of Topics
1	Introduction: Identification of research ideas and needs
2	Research ethics
3	Conducting and Writing a Professional Literature review
4	Mastering proposal writing
5	Institutional review board (IRB) Procedures
6	Clinical study designs and critical appraisal – part 1
7	Experimental designs and critical appraisal – part 2
8	How to design data collection forms
9	Data Management and statistical analysis – part 1
10	Data management and statistical analysis – part 2
11	Basic statistics and data management (applications on software)
12	Manuscript writing 1
13	Manuscript writing 2
14	Mastering references
15	Poster: Design and presentation



5- Pharmacy practice Experience 3 (Introduction to Clinical Practice)

Course Title	Pharmacy Practice Experience 3 (Introduction to Clinical Practice)			الممارسة الصيدلانية ٣ (مقدمة في الممارسة السريرية)		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
	LT	LB	TR			
	CPP	532	2	-	-	104
Level/year	10 th Level / 5 th Year					
Prerequisites	-					
Co-requisites	-					
Course Description:						
<p>The Introductory Pharmacy Practice Experience (IPPE) - Introduction to Clinical Practice aims to allow pharmacy students to be familiarized with the role of the clinical pharmacist in the hospital setting. They will also be exposed to obtain experience in working with the interprofessional team, optimize the pharmacotherapy plan for the patient.</p>						
Dates and times allocation of field experience activities						
<ul style="list-style-type: none">• Number of weeks: (13) week, One day per week (8 am - 4 pm)• Number of hours: (104) training hour						
<p>The introduction to clinical practice experience allows pharmacy interns to achieve the following:</p>						
<ol style="list-style-type: none">1. Describe the state of common diseases in the clinical area and their pathophysiology.2. Perform clinical presentation, diagnosis, and provide an evidence-based pharmacotherapy plan.3. Collect patient information, including medication history, home medication, lab, and allergy, among others.4. Recommend changes to the drug therapy regimen through monitoring and assessing/reassessing patient information.5. Identify adverse drug reactions and interactions such as drug-drug, drug-food, drug-disease, or drug-lab.6. Perform patient's counselling under the supervision of the preceptor.7. Develop a SOAP note presentation.8. Develop collaborative professional relationships and demonstrate excellent communication skills when providing verbal information, presentations, and recommendations to the medical team.9. Effectively participate in an Interprofessional education activity experience.10. Effectively communicate the drug treatment plan to the patient with the appropriate precautions and expectations.11. Conduct discussions on topics based on the requirement of rotation and student interests.12. Promote self-directed learning through a self-initiated, proactive, and evidenced-based clinical pharmacy practice.13. Demonstrate cultural competency in caring for patients and in interacting with other healthcare providers that are encountered in a primary/ambulatory care setting.14. Demonstrate professional attitudes and behaviours that characterize a professional pharmacist.						



Elective Courses: the student choose one from the following five courses

1- Antimicrobial Stewardship

Course Title	Antimicrobial Stewardship			إدارة علاجات الأمراض المعدية		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	522	3	3	-	-
Level/year	10 th Level /5 th year					
Prerequisites	-					
Co-requisites	-					

Course Description:

The Antimicrobial Stewardship course is an innovative and intensive course for pharmacists focusing on the pharmacist's role in the area of appropriate use of antimicrobial agents .This course, which emphasizes a health care team approach, seeks to foster the development of a strong knowledgebase in microbiology, pharmacology and disease state management in order to successfully implement an antibiotic stewardship program that will improve patient care, reduce healthcare expenditures and potentially reduce rates of resistance and prolong the longevity of the limited number of antimicrobial agents available to treat infections

Topics:

No	List of Topics
1	Advanced Anti-Microbial Stewardship
2	Anti-microbial Stewardship and Microbiology: focus on rapid diagnostic tests
3	PK/PD, Introduction to Antimicrobial Pharmacokinetics and Pharmacokinetics
4	Catheter Related Bloodstream Infections (CRBSI)-Simulated Case
5	Catheter Associated Urinary Tract Infections (CAUTI)
6	Antibiotic dosing in Special Populations-Flipped Class Presentation
7	Multi-drug Resistant Organisms: Detection, Epidemiology and Management
8	Exam 1
9	Immunocompromised Infections
10	Intervention and Measuring Outcomes
11	Infection Prevention and Control
12	Novel Antibiotics (Journal Club)
13	Emerging Infectious Disease
14	Longitudinal Project
15	Exam 2



2- Pediatrics Pharmacotherapy

Course Title	Pediatrics Pharmacotherapy			العلاج الدوائي للأطفال		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	528	3	3	-	-
Level/year	10 th Level /5 th year					
Prerequisites	-					
Co-requisites	-					

Course Description:

This course Introduces the unique needs and pharmacotherapy management of pediatric patients and the role of the pharmacist in providing pediatric pharmacy services. It also presents an overview of disease pathophysiology, clinical features, clear goals for therapy, and insightful treatment considerations based on primary literature, clinical guidelines, and extensive clinical experience in pediatric population

Topics:

No	List of Topics
1	Introduction to Pediatric Pharmacy Practice; Overview of Growth and development of Neonates, Infants, Children, and adolescents
2	Unique pharmaceutical needs of pediatric patients in the following areas: 1) pharmacokinetics, 2) drug delivery (oral and parenteral), and 3) provision of pharmacy services
3	Pediatric Pharmacy Services: Unique needs at a Pediatric Hospital/ Pediatric Unit of a hospital - (<i>Quiz 1</i>)
4	Neonatology Part1: Introduction & Pharmacotherapy (<i>2 case studies</i>)
5	Neonatology – Part2: Pharmacotherapy for common complications (<i>2 case studies</i>)
6	Communicating with Parents and Pediatric Patients (<i>2 simulation case studies</i>)
7	Exam 1
8	Pediatric Advanced Life support – Certification (<i>simulation case study</i>)
9	Otitis Media; Croup and other respiratory disorder: Case-based discussion
10	Diabetic Pediatric Patient: Case-based discussion
11	Attention Deficit Disorders and Pain Management: Case-based discussion (<i>Quiz 2</i>)
12	Hematology/ Oncology in Pediatrics: Case-based discussion
13	Juvenile Rheumatoid Arthritis (JRA) , Cystic Fibrosis (CF) and Kawasaki Disease (<i>Case-based discussion guideline implementation</i>)
14	Career Options in Pediatric Pharmacy Practice and Career Planning (<i>Journal club/project</i>)
15	Exam 2



3- Geriatrics Pharmacotherapy

Course Title	Geriatrics Pharmacotherapy			العلاج الدوائي للمسنين																																		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours																																		
				LT	LB	TR																																
	CPP	529	3	3	-	-																																
Level/year	10 th Level /5 th year																																					
Prerequisites	-																																					
Co-requisites	-																																					
Course Description:																																						
Geriatric Pharmacotherapy introduces the unique needs and pharmacotherapy management of geriatric patients																																						
Topics:																																						
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15	Exam 2																																					



4- Women's Health Pharmacotherapy

Course Title	Women's Health Pharmacotherapy			العلاج الدوائي وصحة المرأة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	520	3	3	-	-
Level/year	10 th Level /5 th year					
Prerequisites	-					
Co-requisites	-					

Course Description:

Introduces the unique needs and pharmacotherapy management of common complaints and disorders that occur in women. This course focuses on identifying the major physical, mental, social and emotional issues affecting women's health and develop appropriate therapeutic care in women across the life span and develop recommendation and explain rationale.

Topics:

No	List of Topics
1	Introduction: Historical and Social Issues Case study-Factors influencing women's health care including race, ethnicity, religion, and cultural sensitivity, and psychosocial and socioeconomic factors
2	Case study-Sex and gender differences (pharmacokinetics and pharmacodynamics)
3	Case study-Menstrual and ovarian conditions-part 1 •Premenstrual syndrome and premenstrual dysphoric disorder •Menstruation-related disorders
4	Case study-Menstrual and ovarian conditions-part 2 •Endometriosis •Polycystic ovary syndrome (Chapter 14-16)
5	Case study-Menstrual and ovarian conditions-part 3 • Menopause
6	Case study-Contraceptive methods
7	Exam 1
8	Pregnancy health care-part 1 •Case study -Pregnancy planning and care •Case study -Infertility
9	Pregnancy health care-part 2 •Case study -Principles of drug therapy in pregnancy and lactation •Case study -Conditions associated with pregnancy •Case study -Pregnancy and pre-existing illness
10	Pregnancy health care-part 3 •Case study -Preterm labor, labor and delivery •Case study -Postpartum care



11	Nutrition and Eating Disorders: 2 Case Studies
12	Sexual disorders: 2 Case Studies
13	Cancer in Women
14	Cancer in Women
15	Exam 2



5- Critical Patient Pharmacotherapy

Course Title	Critical Patient Pharmacotherapy			العلاج الدوائي لمرضى الحالات الحرجة		
Course information	Course Code	Course no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	521	3	3	-	-
Level/year	10 th Level /5 th year					
Prerequisites	-					
Co-requisites	-					

Course Description:

The Critical Patient Pharmacotherapy introduces the unique needs and pharmacotherapy management of critical care patients and the role of the pharmacist in providing critical care pharmacy services

Topics:

No	List of Topics
1	Critical Care Medicine
2	Evaluating and Managing Critical Care Patients; role of the pharmacist
3	Interpreting Lab and Patient Data in the Critical Care Setting
4	Sepsis (Case 1 and another Case developed by the Instructor)
5	Seizure (Case 2 and another Case developed by the Instructor)
6	Bone Marrow Transplant (Case 3 and another Case developed by the Instructor)
7	Exam 1
8	Motor Vehicle Collision (Case 4 and another Case developed by the Instructor)
9	GI (Case 5 and another Case developed by the Instructor)
10	Hyponatremia (Case 6)
11	Community Acquired Pneumonia (Case 7 and another Case developed by the Instructor)
12	Hepatic (Case 8 and another Case developed by the Instructor)
13	Gram Negative Sepsis (Case 9 and another Case developed by the Instructor)
14	Myocardial Infarction (Case 11 and another Case developed by the Instructor)
15	Exam 2



Internship year

Advanced Pharmacy Practice Experience (APPE)

Field experience Title	Advanced Pharmacy Practice Experience			التدريب الميداني المتقدم		
Field experience information	Code	no.	Credit Hours (CR)	Contact hours		
				LT	LB	TR
	CPP	590, 591, 592, 593, 594, 595, 596, 597, 598	4	-	-	200
Level/year	11 th & 12 th Level / 6 th year					
Prerequisites	Students need to pass all the courses from Year 1 to Year 5					
Co-requisites	-					



Internship year Description:

All students are required to finish **nine** rotations during their internship year.

4 credit hours for each course –36 credit hours in total

- Number of weeks: (45) week, 9 rotations each rotation is 5 weeks.
- Number of days: (225) day.
- Number of hours: (1800) hour.

Advanced Pharmacy Practice Experience (1) (Primary/ Ambulatory Care) CPP 590

Advanced Pharmacy Practice Experience (2) (General Internal Medicine) CPP 591

Advanced Pharmacy Practice Experience (3) (General Internal Medicine Specialty) CPP 592

Advanced Pharmacy Practice Experience (4) (Community Practice) CPP 593

Advanced Pharmacy Practice Experience (5) (Hospital Practice) CPP 594

Advanced Pharmacy Practice Experience (6) CPP 595

Advanced Pharmacy Practice Experience (7) CPP 596

Advanced Pharmacy Practice Experience (8) CPP 597

Advanced Pharmacy Practice Experience (9) CPP 598

Five of the **nine** rotations are core rotations and the **four** remaining rotations can be chosen from available pharmacy practice settings:

- Internal medicine patient care (cardiology, nephrology, Intensive Care Unit, Emergency, Pediatrics, Infectious, Neurology, Rheumatology, Oncology, Total Parenteral Nutrition (TPN), Hematology, Psychiatry, Solid organ transplant).
- Hospital/health system Practice (Inpatient and Outpatient).
- Drug Information.
- Pharmacy Administration and Regulation.
- Community pharmacy.
- Pharmaceutical company.
- Pharmaceutical Industry.
- Formulary management.
- Pharmacovigilance.
- Pharmacoeconomics.
- Regulatory Affair.
- Benefit-Risk Assessment .
- Medication safety .
- Research Rotation.
- Academia Rotation.
- Simulation Rotation.