



Course Specification of Pharmacology II

I. Course Identification and General Information:

1.	Course Title	Pharmacology II				
2.	Course Number & Code:	Ph468				
3.	Credit hours:	C.H				Total
		Th.	Pr.	Tr.	Seminar.	
		2	2			3
4.	Study level/ semester at which this course is offered:	3 rd level /2 nd semester				
5.	Pre –requisite (if any):	<ul style="list-style-type: none"> ▪ Anatomy and histology ▪ Physiology I, II ▪ General Pathology 				
6.	Co –requisite (if any):	-				
7.	Program (s) in which the course is offered:	Bachelor of Pharmacy				
8.	Language of teaching the course:	English				
9.	The department in which the course is offered:	-				
10.	Location of teaching the course:	Faculty of Pharmacy- Sana`a university				
11.	Prepared by:	Associate Prof. Fahmy M. Al-Wasei				
12.	Date of approval:					

II. Course description:

The course also deals with the study of pharmacodynamics and pharmacokinetics of drugs used for Respiratory, Cardiovascular systems, Blood and Drugs used for alimentary system disorders.



III. Intended learning outcomes (ILOs) of the course:

At the end of this course, the students will be able to:

1. Determine pharmacokinetics (absorption, distribution, metabolism and excretion) and drug benefits (therapeutic actions, indications, efficacy and potency) & drug physiology of drugs used for respiratory, cardiovascular systems , blood and Drugs used for alimentary system disorders.
2. Discuss drug limitations (side effects, contraindications, precautions, use in special patent categories and drug interactions) of drugs used for respiratory, cardiovascular systems , blood and drugs used for alimentary system disorders
3. Comprehend his/her role as a pharmacist in providing correct information on rational use of medications.
4. Classify drugs affecting a drugs used for respiratory, cardiovascular systems, blood and Drugs used for alimentary system disorders into various categories
5. Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency) and drug limitations.
6. Relate drug indications to MAO of drugs.
7. Predict drug limitations on the basis of Drug MOA.
8. Select an appropriate drug for patients based on drug benefits and limitation.
9. Calculate accurately drug's dosage, bioavailability, plasma half-life and volume of distribution in different patient populations.
10. Carry out appropriate techniques and measurements in experimental pharmacology.
11. Identify the common laboratory animals, laboratory equipment and conduct analytical procedures, appropriate to pharmacology, in a safe, accurate and precise used in experimental pharmacology.
12. Prepare critical, scientific and referenced reports
13. Share successfully in team-work.
14. Show respect to life.
15. Demonstrate time management and self-learning during performing practical and professional works and assignments.

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ا.م.د. هدى العماد

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د.خالد الشوبة

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ا.د. محمود البريهي

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د.فهمي الواسعي



IV. Intended learning outcomes (ILOs) of the course:

(A) Knowledge and Understanding:

Alignment Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: **Knowledge and Understanding.**

Program Intended Learning Outcomes (Sub-PILOs) in: Knowledge and Understanding		Course Intended Learning Outcomes (CILOs) in: Knowledge and Understanding	
After completing this program, students would be able to:		After participating in the course, students would be able to:	
A2-	Recognize the physicochemical properties, preparation, structure activity relationship (SAR), toxicity and the modern methods of analysis of various substances of chemical and natural products of therapeutic potential as well as the basic principle of drug discovery, design and development.	a1-	Determine pharmacokinetics (absorption, distribution, metabolism and excretion) and drug benefits (therapeutic actions, indications, efficacy and potency) & drug physiology of drugs used for respiratory, cardiovascular systems , blood and Drugs used for alimentary system disorders.
A3-	Describe the general cellular, biochemical and physiological aspects of human body and recognize the pharmacokinetics, pharmacodynamics, disease pathophysiology, and pharmacogenetic of therapeutic agents to provide pharmaceutical care and facilitate management of patient's medication, rationalize drug use and overall health needs.	a2-	Discuss drug limitations (side effects, contraindications, precautions, use in special patent categories and drug interactions) of drugs used for respiratory, cardiovascular systems , blood and drugs used for alimentary system disorders .
		a3-	Comprehend his/her role as a pharmacist in providing correct information on rational use of medications.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment Learning Outcomes of Knowledge and Understanding to Teaching and Assessment Methods:

الموصف د. فهمي الواسعي
نائب العميد لشؤون الجودة ا.د. محمود البريهي
رئيس القسم د. خالد الشوبية
عميد الكلية ا.م.د. هدى العماد
عميدة مركز التطوير وضمان الجودة ا.د. القاسم محمد عباس
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Course Intended Learning Outcomes (CILOs) in Knowledge and Understanding After participating in the course, students would be able to:		Teaching strategies/methods to be used	Methods of assessment
a1-	Determine pharmacokinetics (absorption, distribution, metabolism and excretion) and drug benefits (therapeutic actions, indications, efficacy and potency) & drug physiology of drugs used for respiratory, cardiovascular systems , blood and Drugs used for alimentary system disorders.	Lectures methods , Computer based teaching and learning, group discussion and tutorial	Quizzes, Attendance, Participation, Short answers, reports, homework, and Written exam.
a2-	Discuss drug limitations (side effects, contraindications, precautions, use in special patent categories and drug interactions) of drugs used for respiratory, cardiovascular systems , blood and drugs used for alimentary system disorders .		
a3-	Comprehend his/her role as a pharmacist in providing correct information on rational use of medications.		

(B) Intellectual Skills:

Alignment Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Intellectual skills	
Program Intended Learning Outcomes (Sub-PILOs) in Intellectual skills	Course Intended Learning Outcomes (CILOs) of Intellectual Skills
After completing this program, students would be able to:	After participating in the course, students would be able to:

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د.خالد الشوبة

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الموصف
د.فهمي الواسعي



B1-	Consolidate the chemical, biochemical and physiological principles to construct the pharmacophores of the structure and their effect on the stability, pharmacokinetic and pharmacodynamic profiles of the drug.	b1-	Classify drugs affecting a drugs used for respiratory, cardiovascular systems , blood and Drugs used for alimentary system disorders into various categories
		b2-	Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency) and drug limitations.
B2-	Categorize the synthetic and natural drugs	b3-	Relate drug indications to MAO of drugs.
	according to their mechanism of action, systemic effect, therapeutic uses, contraindication and toxicity.	b4-	Predict drug limitations on the basis of Drug MOA.
B5-	Interpret the prescriptions, patient and clinical data, Analysis all the encountered pharmaceutical problems and plan the strategies for their solution, to develop the health care.	b5-	Select an appropriate drug for patients based on drug benefits and limitation.

Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment Learning Outcomes of Intellectual Skills to Teaching Methods and Assessment Methods:

<i>Course Intended Learning Outcomes (CILOs) in Intellectual Skills.</i>		Teaching strategies/methods to be used.	<i>Methods of assessment</i>
After participating in the course, students would be able to:			
b1-	Classify drugs affecting a drugs used for respiratory, cardiovascular systems , blood and Drugs used for alimentary system disorders into various categories	Lectures methods, Group Discussion, Problem solving sessions, brainstorming and Computer based teaching and learning	Quizzes, Attendance, Participation, Short answers, reports, homework, and Written exam.
b2-	Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency) and drug limitations.		
b3-	Relate drug indications to MAO of drugs.		



b4-	Predict drug limitations on the basis of drug MOA.		
b5-	Select an appropriate drug for patients based on drug benefits and limitation.		

(C) Professional and Practical Skills.

Alignment Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: Professional and

Practical Skills			
Program Intended Learning Outcomes (Sub- PILOs) in Professional and Practical Skills		Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills	
After completing this program, students would be able to:		After participating in the course, students would be able to:	
C1-	Operate different pharmaceutical equipments and instruments and use emerging technologies in design, synthesis, pre-formulation, formulation, packaging, storage and analysis of pharmaceutical products according to GLP, GSP and cGMP guidelines.	c1-	Calculate accurately drug's dosage, bioavailability, plasma half-life and volume of distribution in different patient populations.
		c2-	Carry out appropriate techniques and measurements in experimental pharmacology.
		c3-	Identify the common laboratory animals, laboratory equipment and conduct analytical procedures, appropriate to pharmacology, in a safe, accurate and precise used in experimental pharmacology.
C2-	Handle and dispose chemicals and pharmaceutical preparations including radiopharmaceuticals safely and effectively.	c4-	Prepare critical, scientific and referenced reports .
C5-	Conduct research studies and utilize the results in different pharmaceutical fields.		

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ا.د. محمود البريهي

الموصف
د.فهمي الواسعي



Teaching And Assessment Methods For Achieving Learning Outcomes:

Alignment Learning Outcomes of Professional and Practical Skills to Teaching and Assessment Methods:

Course Intended Learning Outcomes (CILOs) in Professional and Practical Skills After participating in the course, students would be able to:		Teaching strategies/methods to be used	Methods of assessment
c1-	Calculate accurately drug's dosage, bioavailability, plasma half-life and volume of distribution in different patient populations.	Lectures methods, practical session, brainstorming and group discussion	Practical works, homework, practical exam and practical reports.
c2-	Carry out appropriate techniques and measurements in experimental pharmacology.		
c3-	Identify the common laboratory animals, laboratory equipment and conduct analytical procedures, appropriate to pharmacology, in a safe, accurate and precise used in experimental pharmacology.		
c4-	Prepare critical, scientific and referenced reports		

(D) General / Transferable Skills:

Alignment Course Intended Learning Outcomes (CILOs) to Program Intended Learning Outcomes (PILOs) in: General and Transferable skills

Program Intended Learning Outcomes (PILOs) in General / Transferable skills		Course Intended Learning Outcomes (CILOs) in General / Transferable skills	
After completing this program, students would be able to:		After participating in the course, students would be able to:	
D1-	Practice independent learning needed for continuous professional development	d1-	Share successfully in team-work.
D5-	Apply information and communication technology and working effectively in a team.	d2-	Show respect to life.

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		d3-	Demonstrate time management and selflearning during performing practical and professional works and assignments.
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Alignment Learning Outcomes of General and Transferable skills to Teaching and Assessment Methods.

Course Intended Learning Outcomes (CILOs) in General and Transferable Skills After participating in the course, students would be able to:		Teaching strategies/methods to be used.	Methods of assessment
d1-	Share successfully in team-work.	Small group discussions, Tutorials and Practical session	Homework and reports.
d2-	Show respect to life.		
d3-	Demonstrate time management and self-learning during performing practical and professional works and assignments.		

V. Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect

Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Number of weeks	Contact hours
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ا.م.د. هدى العماد

عميد الكلية
د.خالد الشوبية

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ا.د. محمود البريهي

الموصف
د.فهمي الواسعي



1.	Drugs acting on Respiratory system	a1, a2, a3, b1, b2, b3, b4, b5, d1, d2	<p>Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :</p> <ul style="list-style-type: none"> • Drugs for common cold : nasal decongestant, antihistamines □ Drugs for cough • Drugs for bronchial asthma 	2	4
2.	Cardiovascular system drugs	a1, a2, a3, b1, b2, b3, b4, b5, c2, d3	<p>Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :</p> <ul style="list-style-type: none"> • Diuretics and Antihypertensive • Hypertensive • Anti-angina and drugs for myocardial infarction • Drugs for congestive heart failure • Antiarrhythmic 	4	8
3.	Midterm exam	a1-3, b1-5		1	2
4.	Drugs for Blood		Pharmacokinetics,		

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	Disorders	a1, a2, a3, b1, b2, b3, b4, b5, d1, d2	Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of : • Haematinics (antianaemic drugs) • Antihemorrhagic drugs □ Anticoagulants	3	6
5.	Drugs for Alimentary System Disorders	a1, a2, a3, b1, b2, b3, b4, b5, d1, d3	Physicochemical properties, synthesis, chemical & common names, structureactivity relationship, metabolism of •Antacids and Drugs for Peptic Ulcer •Anti- emetics • Laxatives •Anti-diarrheal •Antispasmodics •Drugs for irritable colon •Hepatic protective Drugs for gall bladder disorders	4	8
6.	Course Review	a1-3, b15,d1-3	Review of the course topics by discussion session.	1	2
7.	Final Exam	a1-3, b1-5		1	2
Number of Weeks /and Units Per Semester				16	32

b - Practical Aspect

الموصف
د. فهمي الواسعي

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إ.د. محمود البريهي

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Order	Tasks/ Experiments	CILOs	Number of Weeks	Contact Hours
		(symbols)		
1	Demonstration of the effects of drugs on the blood pressure in an anesthetized rat.	c1-c4, d1-d3	1	2
2.	Record the effects of drugs on the blood pressure and electrocardiogram of an anesthetized rat.	c1-c4, d1-d3	2	4
3	Demonstration of isolated frog heart preparation	c1-c4, d1-d3	1	2
4	Effect of different ions on isolated frog heart preparation	c1-c4, d1-d3	1	2
5	Effect of Adrenaline and propranolol on isolated frog heart preparation	c1-c4, d1-d3	1	2
6	Effect of Ach and atropine on isolated frog heart preparation	c1-c4, d1-d3	1	2
7	Determination of bleeding time and clotting time	c1-c4, d1-d3	1	2
8	Mid-Exam	c1-c4, d1-d3	1	2
9	Study of various disorders of Respiratory system	c1-c4, d1-d3	1	2
10	Determination of vital capacity and other respiratory volumes	c1-c4, d1-d3	1	2
11	Recording of spontaneous motor activity, and muscle relaxant activity of drugs using simple experiments.	c1-c4, d1-d3	1	2
12	Study of various disorders of GIT	c1-c4, d1-d3	1	2
13	Use of computer simulated CDs or Video cassettes for pharmacology practical whenever possible.	c1-c4, d1-d3	2	4
14	Final Exam	c1-c4	1	2
Number of Weeks /and Units Per Semester			16	32

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VI. a-Teaching strategies of the course:

Lecture method, Group Discussion, Problem solving sessions and Computer based teaching and learning, tutorials, brainstorming and Practical sessions.

b- Assessment Methods:

Quizzes, Attendance, Participation, Short answers, reports, homework, and Written exam Practical works, practical exam and practical reports.

VII. Assignments:

No.	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Homework Assignments	a1-3, b1-4, d1-2	Sporadic through the semester	10
2	Reports	c1-4, d1-3		

I. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes (CILOs symbols)
1.	Attendance, Participation, reports and quizzes	All Weeks	10	7%	a1-4,b1-4, d1-3
2.	Quizzes and Homework-assignments	Sporadic through the semester	10	7%	a1-4, b2-5, d1-3
3.	Attendance, Practical Reports	All Weeks	15	10%	c1-4
4.	Practical mid-semester exam	7 th	15	10%	c1-4

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5.	Theoretical mid-semester exam	9 th	30	20%	a1, a2, a3, b1, b3
6.	Final Exam (theoretical)	16 th	50	33%	a1-4, b1-5
7.	Final Exam (practical)	16 th	20	13%	c1-4
Total			150	100%	

II. Students' Support:

Office Hours/week	Other Procedures (if any)
Two contact hours per week	None

III. Learning Resources:

1- Required Textbook(s) (maximum two).

- 1- Katzung–Basic and Clinical Pharmacology, (2007), McGraw-Hill
- 2- Rang, Dale and Ritter. Pharmacology, (2007), Churchill Livingstone.

2- Recommended Books and Reference Materials.

1. Richard A. Harvey. Lippincott's pharmacology, 2000, Lippincott William and Wilkins.
2. Udaykumar. Text book of medical pharmacology
3. Lectures Notes and Practical Manual.

3- Electronic Materials and Web Sites *etc.*

www.en.wikipedia.org/

IV. Facilities Required:

- Well-equipped lecture halls with data show facilities, whiteboards,

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1 - Accommodation:	net connection, etc. - Well-equipped laboratories with all required equipment and reagents.
2 - Computing resources:	- Computer laboratory with internet facilities.
V. Course Improvement Processes:	
1- Strategies for obtaining student feedback on effectiveness of teaching	
	<ul style="list-style-type: none"> ▪ Student-based assessment of the effectiveness of teaching using a questionnaire designed by the Quality Assurance Unit at the end of the semester.
	<ul style="list-style-type: none"> ▪ Meeting with students and faculty (once per semester).
2 Other strategies for evaluation of teaching by the instructor or by the department.	
	<ul style="list-style-type: none"> ▪ Assessment of the course syllabus and contents by the teachers using a questionnaire designed by the Quality Assurance Unit of the university at the end of the semester. ▪ Regular meeting and discussion of the course content between the Head of Department and the teaching staff of the course (for theory and practice).
3- Processes for improvement of teaching.	
	<ul style="list-style-type: none"> ▪ Revision of the course specification and its teaching strategies every three academic years after consideration of all issues raised by the teachers and/or students during regular meetings and discussions. ▪ Exploring any possible defects in the course that might be encountered by the teaching staff and their mitigation in subsequent improved versions of course specification.
4- Processes for verifying standards of students' achievement	

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	<ul style="list-style-type: none"> ▪ Checking of a sample of students' work by an independent faculty member. ▪ Periodic exchange and check marking of a sample of students' assignments with a faculty member from another institution. ▪ Adoption of scoring rubrics to assess the students' achievement (both for ongoing or summative assessments). ▪ Regular follow-up of laboratory logbooks to assess the practical achievement of students.
5th Procedures for periodically reviewing of course effectiveness and planning for improvement	
	<ul style="list-style-type: none"> ▪ Student rating and feedback ▪ Peer rating and feedback ▪ Regular meeting of the Curriculum Committee of the faculty.
6- Course development plans	
	<ul style="list-style-type: none"> ▪ Conducting regular workshops for the staff for improving their course specification skills. ▪ Regular revision of course specification and syllabus items.

VIII. Course Policies: (including plagiarism, academic honesty, attendance etc)	
<p>The University Regulations on academic misconduct will be strictly enforced. Please refer to -----</p>	
1	Class Attendance: <ul style="list-style-type: none"> ▪ Attendance of all lectures and practical sessions is required. Unexcused absence exceeding 25% of the lectures or practical sessions will disqualify the student from entering the final exam.
2	Tardy: <p>- Roll will be called in the very beginning of each lecture and practical class. Retardation for more than three weeks without a reasonable excursion, the student involved shall not be allowed to attend the class any longer and consequently shall be considered to be absent.</p>



3	Exam Attendance/Punctuality: <ul style="list-style-type: none"> Exam attendance is obligatory unless being excused by the department and faculty. Absence from assignments or exams will be dealt with according to the general policy of the university.
4	Assignments & Projects: <ul style="list-style-type: none"> Assignments: Written and oral; Laboratory logbook signed by the responsible demonstrator. ■ Projects: Not applicable.
5	Cheating: <ul style="list-style-type: none"> Punishment of cheating will be according to the general policy of the university in this respect.
6	Plagiarism: <ul style="list-style-type: none"> Plagiarism in written essays, reports, etc. is not accepted, and students who plagiarize the works of others will be punished according to the general policy of the university.
7	Other policies: <ul style="list-style-type: none"> General policies of the Students' Affairs of the University and the Quality Assurance Unit.

Course Plan of Pharmacology II

I- Information about Faculty Member Responsible for the Course:							
Name of Faculty Member	Fahmy M. Al-Wasei	Office Hours					
Location & Telephone No.		SAT	SUN	MON	TUE	WED	THU
E-mail			2h				

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		Th.	Seminar	Pr.	F. Tr.	
		2	-	2		3
4-	Study level/year at which this course is offered:	3 rd level /2 nd semester				
5-	Pre –requisite (if any):	<ul style="list-style-type: none"> ▪ Anatomy and histology ▪ Physiology I, II ▪ General pathology 				
6-	Co –requisite (if any):	-				
7-	Program (s) in which the course is offered	Bachelor of Pharmacy				
8-	Language of teaching the course:	English				
9-	System of Study:	Semesters				
10-	Mode of delivery:	Regular				
11-	Location of teaching the course:	Faculty of Pharmacy- Sana`a university				

III- Course description:

The course also deals with the study of pharmacodynamics and pharmacokinetics of drugs used for Respiratory, Cardiovascular systems, Blood and Drugs used for alimentary system disorders.

IV- Intended learning outcomes (ILOs) of the course:

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د.فهمي الواسعي

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At the end of this course, the students will be able to:

1. Determine pharmacokinetics (absorption, distribution, metabolism and excretion) and drug benefits (therapeutic actions, indications, efficacy and potency) & drug physiology of drugs used for respiratory, cardiovascular systems , blood and Drugs used for alimentary system disorders.
2. Discuss drug limitations (side effects, contraindications, precautions, use in special patent categories and drug interactions) of drugs used for respiratory, cardiovascular systems , blood and drugs used for alimentary system disorders
3. Comprehend his/her role as a pharmacist in providing correct information on rational use of medications.
4. Classify drugs affecting a drugs used for respiratory, cardiovascular systems , blood and Drugs used for alimentary system disorders into various categories
5. Compare between therapeutically related drugs based on drug benefits (in particular efficacy and potency) and drug limitations.
6. Relate drug indications to MAO of drugs.
7. Predict drug limitations on the basis of Drug MOA.
8. Select an appropriate drug for patients based on drug benefits and limitation.
9. Calculate accurately drug's dosage, bioavailability, plasma half-life and volume of distribution in different patient populations.
10. Carry out appropriate techniques and measurements in experimental pharmacology.
11. Identify the common laboratory animals, laboratory equipment and conduct analytical procedures, appropriate to pharmacology, in a safe, accurate and precise used in experimental pharmacology.
12. Prepare critical, scientific and referenced reports
13. Share successfully in team-work.
14. Show respect to life.
15. Demonstrate time management and self-learning during performing practical and professional works and assignments.

V- Course Content:

1 – Course Topics/Items:

a – Theoretical Aspect

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د.خالد الشوبية

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ا.د. محمود البريهي

الموصف
د.فهمي الواسعي



Order	Topic List / Units	CILOs (symbols)	Sub-topic List	Week Due	Contact hours
8.	Drugs acting on Respiratory system	a1, a2, a3, b1, b2, b3, b4, b5, d1, d2	<p>Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :</p> <ul style="list-style-type: none"> • Drugs for common cold : nasal decongestant, antihistamines □ Drugs for cough • Drugs for bronchial asthma 	1,2	4
9.	Cardiovascular system drugs	a1, a2, a3, b1, b2, b3, b4, b5, c2, d3	<p>Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of :</p> <ul style="list-style-type: none"> • Diuretics and Antihypertensive • Hypertensive • Anti-angina and drugs for myocardial infarction • Drugs for congestive heart failure 	3-6	8
			□ Antiarrhythmic		
10.	Midterm exam	a1-3, b1-5		7	2

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د.خالد الشوبية

رئيس القسم

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الموصف
د.فهمي الواسعي



11.	Drugs for Blood Disorders	a1, a2, a3, b1, b2, b3, b4, b5, d1, d2	Pharmacokinetics, Pharmacodynamics [drug benefits : MOA, therapeutic action, indications, efficacy and potency) and drug limitation (side effects, precautions, contraindications) and comparison of : • Haematinics (antianaemic drugs) • Antihemorrhagic drugs □ Anticoagulants	8-10	6
12.	Drugs for Alimentary System Disorders	a1, a2, a3, b1, b2, b3, b4, b5, d1, d3	Physicochemical properties, synthesis, chemical & common names, structureactivity relationship, metabolism of •Antacids and Drugs for Peptic Ulcer •Anti- emetics • Laxatives •Anti-diarrheal •Antispasmodics •Drugs for irritable colon •Hepatic protective Drugs for gall bladder disorders	11-14	8
13.	Course Review	a1-3, b15,d1-3	Review of the course topics by discussion session.	15	2
14.	Final Exam	a1-3, b1-5		16	2
Number of Weeks /and Units Per Semester				16	32

b - Practical Aspect

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د.فهمي الواسعي

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إ.د. محمود البريهي

رئيس القسم
د.خالد الشوبية

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إ.م.د. هدى العماد

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Order	Tasks/ Experiments	CILOs (symbols)	Week Due	Contact Hours
1	Demonstration of the effects of drugs on the blood pressure in an anesthetized rat.	c1-c4, d1-d3	1	2
2.	Record the effects of drugs on the blood pressure and electrocardiogram of an anesthetized rat.	c1-c4, d1-d3	2,3	4
3	Demonstration of isolated frog heart preparation	c1-c4, d1-d3	4	2
4	Effect of different ions on isolated frog heart preparation	c1-c4, d1-d3	5	2
5	Effect of Adrenaline and propranolol on isolated frog heart preparation	c1-c4, d1-d3	6	2
6	Effect of Ach and atropine on isolated frog heart preparation	c1-c4, d1-d3	7	2
7	Determination of bleeding time and clotting time	c1-c4, d1-d3	8	2
8	Mid-Exam	c1-c4, d1-d3	9	2
9	Study of various disorders of Respiratory system	c1-c4, d1-d3	10	2
10	Determination of vital capacity and other respiratory volumes	c1-c4, d1-d3	11	2
11	Recording of spontaneous motor activity, and muscle relaxant activity of drugs using simple experiments.	c1-c4, d1-d3	12	2
12	Study of various disorders of GIT	c1-c4, d1-d3	13	2
13	Use of computer simulated CDs or Video cassettes for pharmacology practical whenever possible.	c1-c4, d1-d3	14,15	4
14	Final Exam	c1-c4	16	2
Number of Weeks /and Units Per Semester			16	32

VI- a-Teaching strategies of the course:

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عميدة مركز التطوير وضمان الجودة ا.م.د. هدى العماد
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Lecture method, Group Discussion, Problem solving sessions and Computer based teaching and learning, tutorials, brainstorming and Practical sessions.

b- Assessment Methods:

Quizzes, Attendance, Participation, Short answers, reports, homework, and Written exam Practical works, practical exam and practical reports.

VII. Assignments:

No.	Assignments	Aligned CILOs (symbols)	Week Due	Mark
1	Homework Assignments	a1-3, b1-4, d1-2	Sporadic through the semester	10
2	Reports	c1-4, d1-3		

VI. Schedule of Assessment Tasks for Students During the Semester:

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes (CILOs symbols)
8.	Attendance, Participation, reports and quizzes	All Weeks	10	7%	a1-4,b1-4, d1-3
9.	Quizzes and Homework-assignments	Sporadic through the semester	10	7%	a1-4, b2-5, d1-3
10.	Attendance, Practical Reports	All Weeks	15	10%	c1-4
11.	Practical mid-semester exam	7 th	15	10%	c1-4
12.	Theoretical mid-semester exam	9 th	30	20%	a1, a2, a3, b1, b3



13.	Final Exam (theoretical)	16 th	50	33%	a1-4, b1-5
14.	Final Exam (practical)	16 th	20	13%	c1-4
Total			150	100%	

VII. Students' Support:

Office Hours/week	Other Procedures (if any)
Two contact hours per week	None

VIII. Learning Resources:

1- Required Textbook(s) (maximum two).

- 3- Katzung–Basic and Clinical Pharmacology, (2007), McGraw-Hill
- 4- Rang, Dale and Ritter. Pharmacology, (2007), Churchill Livingstone.

2- Recommended Books and Reference Materials.

4. Richard A. Harvey. Lippincott's pharmacology, 2000, Lippincott William and Wilkins.
5. Udaykumar. Text book of medical pharmacology
6. Lectures Notes and Practical Manual.

3- Electronic Materials and Web Sites *etc.*

www.en.wikipedia.org/

IX. Facilities Required:

1 - Accommodation:	<ul style="list-style-type: none"> - Well-equipped lecture halls with data show facilities, whiteboards, net connection, etc. - Well-equipped laboratories with all required equipment and reagents.
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3 - Computing resources:	- Computer laboratory with internet facilities.
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X. Course Improvement Processes:

6- Strategies for obtaining student feedback on effectiveness of teaching	
	<ul style="list-style-type: none"> ▪ Student-based assessment of the effectiveness of teaching using a questionnaire designed by the Quality Assurance Unit at the end of the semester. ▪ Meeting with students and faculty (once per semester).
7- Other strategies for evaluation of teaching by the instructor or by the department.	
	<ul style="list-style-type: none"> ▪ Assessment of the course syllabus and contents by the teachers using a questionnaire designed by the Quality Assurance Unit of the university at the end of the semester. ▪ Regular meeting and discussion of the course content between the Head of Department and the teaching staff of the course (for theory and practice).
8- Processes for improvement of teaching.	
	<ul style="list-style-type: none"> ▪ Revision of the course specification and its teaching strategies every three academic years after consideration of all issues raised by the teachers and/or students during regular meetings and discussions. ▪ Exploring any possible defects in the course that might be encountered by the teaching staff and their mitigation in subsequent improved versions of course specification.
9- Processes for verifying standards of students' achievement	
	<ul style="list-style-type: none"> ▪ Checking of a sample of students' work by an independent faculty member. ▪ Periodic exchange and check marking of a sample of students' assignments with a faculty member from another institution. ▪ Adoption of scoring rubrics to assess the students' achievement (both for ongoing or summative assessments). ▪ Regular follow-up of laboratory logbooks to assess the practical achievement of students.



1⁰- Procedures for periodically reviewing of course effectiveness and planning for improvement	
	<ul style="list-style-type: none"> ▪ Student rating and feedback ▪ Peer rating and feedback ▪ Regular meeting of the Curriculum Committee of the faculty.
6- Course development plans	
	<ul style="list-style-type: none"> ▪ Conducting regular workshops for the staff for improving their course specification skills. ▪ Regular revision of course specification and syllabus items.

IX. Course Policies: (including plagiarism, academic honesty, attendance etc)	
The University Regulations on academic misconduct will be strictly enforced. Please refer to -----	
1	<p>Class Attendance:</p> <ul style="list-style-type: none"> ▪ Attendance of all lectures and practical sessions is required. Unexcused absence exceeding 25% of the lectures or practical sessions will disqualify the student from entering the final exam.
2	<p>Tardy:</p> <p>- Roll will be called in the very beginning of each lecture and practical class. Retardation for more than three weeks without a reasonable excursion, the student involved shall not be allowed to attend the class any longer and consequently shall be considered to be absent.</p>
3	<p>Exam Attendance/Punctuality:</p> <ul style="list-style-type: none"> ▪ Exam attendance is obligatory unless being excused by the department and faculty. ▪ Absence from assignments or exams will be dealt with according to the general policy of the university.
4	<p>Assignments & Projects:</p> <ul style="list-style-type: none"> ▪ Assignments: Written and oral; Laboratory logbook signed by the responsible demonstrator. ▪ Projects: Not applicable.
5	<p>Cheating:</p> <ul style="list-style-type: none"> ▪ Punishment of cheating will be according to the general policy of the university in this respect.

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6	Plagiarism: <ul style="list-style-type: none">Plagiarism in written essays, reports, etc. is not accepted, and students who plagiarize the works of others will be punished according to the general policy of the university.
7	Other policies: <ul style="list-style-type: none">General policies of the Students' Affairs of the University and the Quality Assurance Unit.

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