



كلية الطب البشري
Faculty of Medicine



The Hashemite University

Course syllabus

General pharmacology

1	Course title	General Pharmacology
2	Course number	0111501203
3	Credit hours (theory, practical)	3 (theory)
	Contact hours (theory, practical)	3 (theory)
4	Course meeting time	On Tuesdays & Thursdays: Tues 8:00 – 10:00 am Thur 8:00 – 9:00 am
	Course location	Faculty of Medicine Theater
5	Program title	Doctor of Medicine
7	Awarding institution	The Hashemite University
8	Faculty	Faculty of Medicine
9	Department	Basic Medical Sciences
10	Level of course	Second year medical students
11	Year of study and semester (s)	2018/2019 first semester
12	Final Qualification	MD degree
13	Other department (s) involved	None
14	Language of Instruction	English
15	Date of production/revision	09/2018

Course Coordinator:

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Office hours: Sundays 11.0 am-1.0 pm
 Tuesdays 10.0am-12.0 pm
 Thursdays 9.0-11.0 am
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Course Description:

The course should cover the following subjects:

1. Pharmacokinetics, Pharmacodynamics, dose response relationship, drug adverse effects, drug interactions, route of drug administration, principles of drug prescription
2. antimicrobial drugs, principles of anticancer drugs, immuno-suppressants and immune-stimulants
3. NSAIDs, paracetamol and treatment of gout
4. Main drugs affecting autonomic nervous system
5. Classification of main drugs affecting cardiovascular system
6. Classification of main drugs affecting respiratory system
7. Classification of main drugs affecting blood system

Intended Learning Outcomes (ILOs):

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

1. Understand the principles of pharmacology that enable the student to use the drug properly and safely in his practice of medicine.
2. Understand the therapeutic indications, contraindications, toxic effects and drug-interaction of commonly used drugs in clinical practice.
3. Able to study main drugs that are used as non-narcotic analgesic, chemotherapeutic agents

Topic Outline and Schedule:

Week	Topic	General Objective
1	Introduction	1. Definition of pharmacology, drug, pharmacokinetics and pharmacodynamics 2. Drug nomenclature 3. Sources of drugs
	Pharmacokinetics A. Absorption	1. Definition 2. Methods of drugs passage across cell membranes 3. Factors affecting
	Pharmacokinetics Parameters of Absorption	1. Bioavailability: definition, value and factors affecting 2. Calculation of bioavailability 3. First pass metabolism

2	Pharmacokinetics B. Distribution	<ol style="list-style-type: none"> 1. Definition 2. Pattern of drugs distribution 3. Factors affecting and plasma protein binding 4. Volume of distribution (Vd): definition, value and factors affecting 5. Calculation of Vd 6. Drug passage across BBB, placenta and in milk
	Pharmacokinetics C. Biotransformation and Excretion	<ol style="list-style-type: none"> 1. Definition 2. Aim of metabolic process 3. Phases of drug metabolism 4. Factor affecting 5. Microsomal enzyme inducers and inhibitors 6. Sites of drug excretion 7. Factors affecting renal excretion
	Pharmacokinetics D. Parameters of elimination	<ol style="list-style-type: none"> 1. Clearance: definition, calculation 2. Plasma half-life: definition, calculation 3. Steady state concentration: definition, calculation 4. Calculations of Loading & maintenance doses 5. First & zero order kinetics
3	Pharmacodynamics Drug action	<ol style="list-style-type: none"> 1. Types of Drug action 2. Mechanisms of drug action 3. Types of receptors & signal transduction.
	Pharmacodynamics Drug-receptor effect	<ol style="list-style-type: none"> 1. Agonist: definition, criteria 2. Theories of drug response 3. Spare receptors 4. Antagonist: definition, criteria and types 5. Partial agonist: definition, criteria
	Pharmacodynamics Drug-response curves	<ol style="list-style-type: none"> 1. Types of drug response curves 2. E_{max}: definition, value 3. Potency: definition, value 4. ED_{50} 5. LD_{50} 6. Therapeutic index & safety margin
4	Pharmacodynamics Drug-response	<ol style="list-style-type: none"> 1. Factors affecting D-R related to drug 2. Chronopharmacology
	Pharmacodynamics Drug-response	<ol style="list-style-type: none"> 1. Factors affecting D-R related to patient: age, sex, pathological state 2. Tolerance, intolerance. 3. Drug habituation & addiction

	Pharmacodynamics Drug-response	<ol style="list-style-type: none"> 1. Idiosyncrasy 2. Drug allergy
5	Adverse reactions	<ol style="list-style-type: none"> 1. Types and examples of adverse drug reactions: ABCDE classifications 2. Predictable & unpredictable reactions
	Drug-drug interactions	<ol style="list-style-type: none"> 1. Pharmaceutical interactions 2. Pharmacokinetic interactions 3. Pharmacodynamic interactions 4. Harmful & beneficial interactions
	Others	<ol style="list-style-type: none"> 1. Route of drug administration, 2. Principles of drug prescription
6	Introduction to ANS & Adrenergic system	<ol style="list-style-type: none"> 1. Classification of nervous system. 2. Classification of autonomic N.S. 3. General actions of adrenergic & cholinergic systems. 4. Types of adrenergic receptors 5. Classification of sympathomimetics
	Adrenergic system	<ol style="list-style-type: none"> 1. Classification of alpha blockers. 2. Classification of beta blockers. 3. Central sympathetic depressants
	Cholinergic system	<ol style="list-style-type: none"> 1. Cholinergic receptors 2. Main cholinomimetics 3. Main Cholinergic blockers
7	Introduction to CVS & Heart failure	<ol style="list-style-type: none"> 1. Main disorders affecting CVS. 2. Pathophysiology of heart failure 3. Main drugs used in heart failure treatment
	Angina pectoris & Arrhythmias	<ol style="list-style-type: none"> 1. Main drug used in treatment of angina. 2. Electricity of heart 3. Classification of Antiarrhythmic agents
	Hypertension	<ol style="list-style-type: none"> 1. Neurohumoral control of blood pressure 2. Main groups used for blood pressure
8	Autacoids Histamine	<ol style="list-style-type: none"> 1. Outline the autacoid agents. 2. Histamine synthesis and release 3. Role of histamine in body. 4. Histamine Receptors
	Antihistaminics	<ol style="list-style-type: none"> 1. First generation of antihistaminics. 2. Second generation of antihistaminics.
	Revision	
	First Examination (30 MCQs Written Exam)	

9	Autacoids Prostaglandins & leukotrienes	<ol style="list-style-type: none"> 1. Synthesis of prostaglandins. 2. Types & Actions of PGs. 3. Types and uses of PGs analogues. 4. Synthesis of LTs 5. Inhibitors of LTs pathway
	Non-narcotic analgesic	<ol style="list-style-type: none"> 1. Classification of analgesic 2. Mechanism of action of NSAIDs 3. Aspirin: mechanism, action, uses, adverse reactions and contraindications 4. Toxicity of aspirin: manifestations and treatment
	Non-narcotic analgesic	<ol style="list-style-type: none"> 1. Different members of NSAIDs 2. Selective COX-II inhibitors 3. Paracetamol 4. Treatment of paracetamol toxicity
10	Gout disorder	<ol style="list-style-type: none"> 1. Definition. 2. Causes of hyperuricemia 3. Pathogenesis of gout disorder 4. Treatment of acute attack of gout 5. Treatment of chronic gout 6. Precautions for treatment of gout
	Chemotherapy Introduction	<ol style="list-style-type: none"> 1. Definitions 2. Bactericidal & bacteriostatic agents 3. Broad spectrum & narrow spectrum agents 4. Classifications of antibacterial agents according to mechanisms of action
	Antibacterial 1. Cell wall inhibitors	<ol style="list-style-type: none"> 1. Beta-lactam antibacterial 2. Classification of Penicillins 3. Spectrum & uses of different members of penicillins 4. Adverse reactions penicillins
11	Cell wall inhibitors	<ol style="list-style-type: none"> 1. Cephalosporins generations 2. Spectrum & uses of different cephalosporins 3. Cephameycins 4. Monobactam & Carbapenems 5. Vancomycin
	2. Inhibitors of bacterial protein synthesis	<ol style="list-style-type: none"> 1. Tetracyclines. 2. Aminoglycosides
	Inhibitors of bacterial protein synthesis	<ol style="list-style-type: none"> 1. Macrolides 2. Chloramphenicol 3. Clindamycin

12	3. Inhibitors of folic acid pathway	1. Classification of sulphonamides 2. Spectrum & uses of different sulphonamides 3. Adverse reactions
	Inhibitors of folic acid pathway	1. Trimethoprim 2. Co-trimoxazole
	Revision	
	Second Examination (30 MCQs Written Exam)	
13	4. Inhibitors of bacterial nucleic acid	1. Generations of Quinolones 2. Spectrum & uses of different quinolones 3. Adverse reactions
	Antifungal agents	1. Types of fungal infections 2. Classifications of antifungals 3. Amphotericin-B 4. Azoles 5. Nystatin
	Antiviral	1. Steps of viral invasion to host cell 2. Mechanism of action of antiviral 3. Amantadine 4. Acyclovir 5. Ribavirin 6. Zidovudine
14	Antiprotozoal	1. Amoebiasis 2. Dialoxanide 3. Metronidazole
14	Cancer chemotherapy	1. General lines of cancer treatment 2. Classification of anticancer chemotherapy 3. Common adverse reactions
	Immunopharmacology	1. Main immunostimulants 2. Main immunoinhibitors
15 & 16	Final Examinations (Final pharmacology exam: 40 MCQs Written Exam)	

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

Textbook & references

Lecture notes

Power Point presentations

Illustrations

Self-readings

Evaluation Methods:**Grading Policy:**

Grades can be based on the following:

First Exam:	30%
Second Exam:	30%
Final Exam:	40%
Total Points:	100%

Course Policies:

Late Assignments: According to college policy

Missed exams: According to college policy

Absence: According to college policy

Cheating: According to college policy

Classroom Protocol: According to college policy

Student rights and responsibilities: According to college policy

References:

- Lippincott's Illustrated Reviews: Pharmacology, Richard A. Harvey, Pamela C. Champe, 6th Edition, 2016, Lippincott Williams & Wilkins.
- Goodman and Gilman's: The Pharmacological basis of therapeutics, last edition, McGraw-Hill.
- Pharmacology, H.P. Rang, M.M. Dale and Ritter, last edition, Churchill Livingstone.
- Elsevier's Integrated Pharmacology, M. Kester, K.E. Vrana, S.A. Quraishi and K.D. Karpa, last edition, MOSBY

Additional information:

The semester is 16 weeks:

14 weeks: (3 theory hours/week) = 42 lectures

Last two weeks for final exams according to university regulation