COURSE PLAN

FIRST: BASIC INFORMATION

College

College : Medicine

Department : Basic Medical Sciences

Course

Course Title : Introduction to Pharmacology

Course Code : 31503203

Credit Hours : Three (3)

Prerequisite : None

Instructor

Name :Dr. Sura Al Zoubi

Office No. : ---

Tel (Ext) : ---

E-mail : @bau.edu.jo.

Office Hours : 11-12 Sunday, Tuesday and Thursday.

Class Times

Building	Day	Start Time	End Time	Room No.
Lecture Hall Complex	Sunday, Tuesday and Thursday	10:00	11:00	2

Text Book

Title : Lippincott's Illustrated Reviews, Richard A. Harvey, Pamela C. Champe, 6th Edition, 2015.

References

1- Goodman and Gilman's: The Pharmacological basis of therapeutics, 12th edition, 2011. McGraw-Hill.

2- Basic and Clinical Pharmacology B. G Katzung 12th Edition Mc Graw Hill (Lange).

SECOND: PROFESSIONAL INFORMATION

COURSE DESCRIPTION

This course covers the study of general characteristics of drugs and their historical development, drug formulation and their sources, drug receptors, pharmacodynamics including mechanisms of action, therapeutic doses, drug absorption, distribution in the body, metabolism and excretion, drug reactions and toxicity, clinical evaluation of drugs, prescription, and drug information

sources. It also covers chemotherapy including types, mechanisms action, pharmacodynamics and side effects of antimicrobial agents. Furthermore it covers drugs affecting autonomic nervous system.

COURSE OBJECTIVES

- To study the general principles of pharmacology that enables the students to use the drug properly and safely in their practice including:

1. Discuss the fundamental concepts of pharmacokinetics, pharmacodynamics, pharmacovigilance, pharmacotherapeutics and pharmacogenetics/genomics.
2. Explain the principles of medication prescription and drugs different routes of administration.
3. Explain the mechanisms of action and side effects of drugs on the autonomic nervous system.
4. Discuss the principles of antimicrobial and antiviral drugs, selective toxicity and clinical application.
5. Study the mechanisms of drug action and drug resistance for antimicrobial drugs.
6. Discuss autacoids and NSAIDs drugs.

COURSE LEARNING OUTCOMES

1) Knowledge and Understanding

On successful completion of the course students will be able to:

1. Demonstrate knowledge and understand the basic concepts of pharmacodynamics and pharmacokinetics.
2. Demonstrate knowledge and understand the pharmacology of drugs affecting autonomic nervous systems.
3. Demonstrate knowledge and understand the pharmacology of antimicrobial agents.
4. Demonstrate knowledge and understand pharmacology of autocoids.
5. Demonstrate knowledge and understand the prescriptions requirements.

2) Professional Skills

The student should be able to differentiate the different pharmacological dosage forms,

different routes of administration and to differentiate the different pharmacological terms.

3) Competences (Transferable skill and attributes)
The student should be able to differentiate the different receptors of autonomic nervous system.

COURSE SYLLABUS

Week No.	Title of Lecture	Learning Objectives
Week1	• Introduction and orientation	1. Define different pharmacological terms. 2. Discuss the importance of studying pharmacology of drugs. 3. List different routes of administration. 4. List different drug dosage forms.
	• Drug discovery and development	1. Discuss drug discovery history. 2. List drug sources. 3. Differentiate between different preclinical and clinical studies. 4. Explain different clinical studies phases in drug discovery.
Week 2	• Drug prescription	1. List the different parts of the medical prescription. 2. Explain the different acronyms in medical prescription. 3. Differentiate between prescribed drugs and over the counter (OTC) drugs.
	• Drug and patient compliance	1. Define patient compliance to drugs. 2. Discuss the importance of drug compliance. 3. List the major factors affect patient compliance to drugs.
Week 3	• Pharmacodynamics of the drugs	1. Define pharmacodynamics. 2. Discuss drug-receptor complex signal transduction 3. List different types of drug receptors. 4. Discuss graded dose–response relations: potency and efficacy. 5. Explain intrinsic activity: agonist, antagonist and antagonist. 6. Study quantal dose–response relationships.
Week 4	• Pharmacokinetics of the drugs	1. Define pharmacokinetics. 2. Study different routes of administration and differentiate between them. 3. Discuss mechanisms of drug absorption. 4. Explain determination of drugs bioavailability.

		5. Discuss different factors affecting distribution of drugs. 6. Explain clearance of drug by metabolism, kidney and other routes. 7. Explain design and optimization of dosage regimen of oral and intravenous doses.
Week 5	• Pharmacovigilance	1. Describe the concept of Pharmacovigilance. 2. Discuss the importance of pharmacovigilance studies in drug safety.
	• Introduction to the ANS	1. List the major excitatory neurotransmitters. 2. List the major inhibitory central neurotransmitters. 3. Identify the major receptor subtypes of CNS neurotransmitters and their functional role. 4. Indicate the involvement of neurotransmitters in the pathophysiology of Diseases.
Week 6	• Cholinergic drugs	1. List the locations and types of acetylcholine receptors in various organ systems. 2. Describe the effects of acetylcholine on major organ systems. 3. Correlate the pharmacokinetic properties of various choline esters and cholinomimetic alkaloids with their chemical properties. 4. Describe the pharmacodynamic differences between direct and indirect-acting cholinomimetic agents. 5. Describe the treatment modalities of organophosphate poisoning.
	• Anticholinergic drugs	1. Describe the effects of cholinergic antagonists on various organ systems. 2. List the major clinical indications of muscarinic antagonists. 3. List the major adverse effects of antimuscarinic agents. 4. Describe the signs, symptoms and treatment of atropine poising
Week 7	• Adrenergic drugs. • Antiandrenergic drugs.	A. 1. Review the steps involved in the synthesis, storage, release and the termination of action of epinephrine and nor epinephrine. 2. List tissues that contain significant numbers $\alpha 1$ or $\alpha 2$ adrenergic receptors. 3. Describe the major systemic effects of a pure alpha agonist. 4. Indicate the major clinical applications and major

		adverse effect of α-receptor agonists. B. 1. List tissues that contain significant numbers of β1 or β2 receptors. 2. Describe the major organ system effects of a pure beta agonist, and a mixed alpha and beta agonist. 3. List the major clinical applications and adverse effect of β-receptor agonists. 5. Indicate the pharmacodynamic differences between direct and indirect acting sympathomimetic amines.
Week 8	**Midterm Exam**	
Week 9	• Pharmacology of Autocoids • Nonsteroidal anti-inflammatory drugs (NSAIDs)	1. Review autocoids. 2. Discuss pharmacology of antihistamine drugs. 3. Explain prostaglandins drugs. 4. Understand NSAIDs mechanism of action, pharmacokinetics and adverse effects.
Week 10	• Toxicology • Drug interaction	1. Describe drug toxicity. 2. Discuss emergency treatment of the poisonous patient. 3. List the different antidotes of different drugs and toxins. 4. Discuss different drug-drug interactions.
Week 11	• Principle of anti-microbial therapy.	1. Discuss selection of antimicrobial drugs. 2. Describe the different route of administration of antimicrobial drugs. 3. Explain chemptherapeutic spectra, drug resistance and combination of antimicrobial drugs. 4. Discuss the rational dosing of antimicrobial drugs, prophylactic use and complications.
	• β- lactam antibiotics.	1. List β- lactam antibiotics. 2. Understand the mechanism of action of penicillins and cephalosporins antibiotics. 3. Study adverse effects and pharmacokinetics of penicillins and cephalosporins antibiotics.
Week 12	• Protein synthesis inhibitor antibiotics.	1. Discuss the pharmacology of Protein synthesis inhibitor antibiotics. 2. Study the pharmacokinetics and adverse effects of each group of protein synthesis inhibitor antibiotics.

	• Sulfonamides antibiotics.	1. Understand the mechanism of action of Sulfonamides antibiotics. 2. Discuss pharmacokinetics and adverse effects of sulfonamides antibiotics.
Week 13	• Quinolones, Folic Acid Antagonists,and Urinary Tract Antiseptics.	1. Discuss the pharmacology of quinolones, folic acid antagonists, and urinary tract antiseptics. 2. Study pharmacokinetic and adverse effects of each group.
	• Antiprotozoal drugs.	a. Review human protozal infections. b. Discuss chemotherapy for amebiasis. c. Study adverse effects and pharmacokinetics of amebicides.
Week 14	• Anthelmintic drugs	1. List major groups of helminthes (worms) that infect humans. 2. Discuss drugs for the treatment of nematodes, trematodes and cestodes. 3. Study pharmacokinetics and adverse effects of anthelmintic drugs.
	• Anti-viral drugs.	1. Review different viral infections. 2. Discuss the pharmacology of respiratory viral infection treatment. 3. Explain treatment of herpes virus infections. 4. Study the mechanism of action, pharmacokinetics and adverse effect of antiviral drugs.
Week 15	• Anti-fungal drugs	1. Discuss fungal infections. 2. Understand the mechanism of action of drugs for subcutaneous and systemic mycotic infections, their pharmacokinetics and adverse effects. 3. Explain pharmacology of drugs for cutaneous mycotic infections treatment.
	• Immunosuppressant drugs.	1. Review the importance of immune system. 2. Discuss pharmacology of selective inhibitors of cytokine production and function. 3. Understand the mechanism of action of immunosuppressive antimetabolite. 4. Study pharmacokinetics and adverse effect of the different immunosuppressant drugs.
Week 16	**Final Exam**	

COURSE LEARNING RESOURCES

Lectures (PowerPoint presentation, videos), Supplementary hand out.

ONLINE RESOURCES

- **www.rxlist.com**
  Contains drugs information of approved drugs in USA. It will consist the Pharmacokinetics of Pharmacodynamics of approved drugs of USA.

- **http://emc.medicines.org.uk/**
  Contains drugs information of approved drugs in UK. It will consist the Pharmacokinetics of Pharmacodynamics of approved drugs of UK.

ASSESSMANT TOOLS

(Write assessment tools that will be used to test students ability to understand the course material and gain the skills and competencies stated in learning outcomes

ASSESSMENT TOOLS	**%**
Mid Exam	50
Final Exam	50
TOTAL MARKS	100

THIRD: COURSE RULES

ATTENDANCE RULES

Attendance and participation are extremely important, and the usual University rules will apply. Attendance will be recorded for each class. Absence of 10% will result in a first written warning. Absence of 15% of the course will result in a second warning. Absence of 20% or more will result in forfeiting the course and the student will not be permitted to attend the final examination. Should a student encounter any special circumstances (i.e. medical or personal), he/she is encouraged to discuss this with the instructor and written proof will be required to delete any absences from his/her attendance records.

Use of Mobile Devices, Laptops, etc. During Class, unexpected noises and movement automatically divert and capture people's attention, which means you are affecting everyone's learning experience if your cell phone, laptop, etc. makes noise or is visually distracting during class. For this reason, students are required to turn off their mobile devices and close their laptops during class.

GRADING SYSTEM
Example:

*Percentages are according to the number of students who passed the exam.

REMARKS

- Discuss the importance of communication skills with patient especially for the explanation of drug use instructions.
- Explain the importance of ethics issue in prescribing drugs especially narcotics.

COURSE COORDINATOR

Course Coordinator:	**Head of Department of Basic Sciences**
Signature:	**Signature:**
Date:	**Date:**