

Kingdom of Saudi Arabia

Alfarabi Private College



المملكة العربية السعودية  
كلية الفارابي الأهلية



Title:

**BASIC PHARMACOLOGY**

**Course specifications**



**Code:** BPC241

**Title:** BASIC PHARMACOLOGY

**Year:** Two

**Level:** Four

**No of Weeks:** 15

**Type of educational unit:** Longitudinal course  Integrated block

**No of credit hours:** 4 (2+1+1)

**Pre-requisites for the course:** None

**Course principle coordinator:**

**Course support coordinator:**

**Members of the Coordinating Committee:**

- 1-
- 2-
- 3-

### **Description**

The main purpose of this block is two-folds. First, to provide students with a solid foundation in the basic concepts and scientific underpinnings of Pharmacology. Second, to provide students with a comprehensive introduction to the Fundamentals of Pharmacotherapy and uses of the major classes of clinically important drugs currently used in medical practice. The course is designed to prepare the student for the clinical study of therapeutics by providing knowledge of the manner in which drugs modify biological function. The course includes a systematic study of the effects of drugs on different organ systems and disease processes, the mechanisms by which drugs produce their therapeutic and toxic effects, and the factors influencing their absorption, distribution and biological actions.



## Objectives:

	<b>NQF Learning Domains And Course Learning Outcomes</b>	<b>Course Teaching Strategies</b>	<b>Course Assessment Methods</b>
<b>1.0</b>	<b>Knowledge</b>		
1.1	Define the following terms: clinical pharmacokinetics, pharmacodynamics, and clearance, volume of distribution, half-life, bioavailability, linear pharmacokinetics, and nonlinear pharmacokinetics.	Lectures & tutorials	Written examinations
1.2	List patient characteristics needed to decide on the best drug dose for an individual.	Lectures & tutorials	Written examinations
1.3	Describe the processes of absorption, distribution, biotransformation, elimination of drugs	Lectures & tutorials	Written examinations
1.4	Describe the pharmacology of different groups of drugs acting on the autonomic nervous system	Lectures & Tutorials	Written examinations
1.5	Describe the pharmacokinetic variables such as volumes of distribution, elimination rates, half-lives and areas under the curve	Lectures & Tutorials	Written examinations
1.6	Describe the concepts of routes of drug administration with special emphasis on clinical usefulness of each route	Lectures & Tutorials	Written examinations
1.7	Describe the major mechanisms of action of major classes of drugs	Lectures & Tutorials	Written examinations
1.8	Describe the types, locations and the responses mediated by the main types of autonomic receptors	Lectures & tutorials	Written examinations
1.9	List the advantages and disadvantages of different routes of drug administration	Lectures & tutorials	Written examinations
1.10	Describe the various mechanisms of action of classes of drugs, presenting in each case several drugs as	Lectures & tutorials	Written examinations



	representative examples.		
<b>2.0</b>	<b>Cognitive Skills</b>		
2.1	Discuss the various drug metabolism enzymes and drug transport proteins and their importance in drug bioavailability and elimination.	Clinical & Practical sessions	Spotter examination
2.2	Applying the pharmacokinetic principles and parameters on drugs.	Clinical & Practical sessions	Spotter examination
<b>4.0</b>	<b>Communication, Information Technology, Numerical</b>		
<b>5.0</b>	<b>Psychomotor</b>		

## Content

### Topics to be covered in this block:

- Introduction to Pharmacology
- Pharmacokinetics including the following:
  - Drug Absorption
  - Bioavailability and Drug Distribution
  - Drug Biotransformation and Drug Elimination.
- Pharmacodynamics Principles including the following:
  - Mechanisms of Drug action.
  - Dose/Response Relationship Drug-Receptor Types
- Drug affecting the nervous system
- Drugs Affecting the Cardiovascular System
- Basic Principle of Antimicrobial Agents
- Immunosuppressant Agents
- Basic Principles of Chemotherapy
- Antihistamines & Corticosteroids
- Antipyretics, Analgesics & NSAIDs
- Toxicology Principle & Poisoning Control
- Principles of Gene Therapy & Drug Interaction
- Complementary and Alternative Medicine
- Antipyretics, Analgesics & NSAIDs
- CNS Pharmacology
- Toxicology

### Learningstrategy

The block will utilize the student-centeredness, and integration approaches to maximize correlation, learning and retention of the learned knowledge, skills and attitudes. Lectures will be of the interactive type and as few as possible. Certain materials will be studied through practical



sessions and some of the important issues related to pharmacology will be learned through seminar presentations.

## Timetable

<b>Week One: Registration</b> <b>Sunday 18-9-2016.</b>		
<b>Registration</b>		
<b>Week Two: PHARMACOKINETICS.</b> <b>Sunday 25-9-2016.</b>		
Type of activity	Code	Title of activity
Lecture 1	L1	Introduction to Pharmacology
Lecture 2	L2	Drug absorption
Seminar 1	S 1	Drug nomenclature.
VIRTUAL LAB	VL	Introduction to virtual lab
<b>Week Three: PHARMACOKINETICS.</b> <b>Sunday 2-10-2016.</b>		
Type of activity	Code	Title of activity
Lecture 3	L3	Drug distribution
Lecture 4	L4	Drug metabolism.
Seminar 2	S 2	Complementary and alternative medicine.
VIRTUAL LAB	VL	Session 1.
<b>Week Four: PHARMACODYNAMICS.</b> <b>Sunday 9 - 10- 2016.</b>		
Type of activity	Code	Title of activity
Lecture 5	L5	Drug elimination.
Lecture 6	L6	Cellular and molecular targets for drug action
Seminar 3	S 3	Determination of key pharmacokinetic parameters.
VIRTUAL LAB	VL	Session 2.
<b>Week Five: PHARMACODYNAMICS.</b> <b>Sunday 16 - 10 - 2016.</b>		
Type of activity	Code	Title of activity
Lecture 7	L7	Drug-receptor interactions
Lecture 8	L8	Agonists and antagonists
Seminar 4	S 4	Types of receptor antagonists.
VIRTUAL LAB	VL	Session 3
<b>Week Six: DRUG INTERACTIONS AND PRESCRIBING</b> <b>Sunday 23 - 10 - 2016.</b>		
Type of activity	Code	Title of activity
Lecture 9	L9	Dose response relationships.



Lecture 10	L10	Drug interactions pharmacokinetic and pharmacodynamic mechanisms
Seminars 5	S 5	Drug drug interactions (Applications)
PRACTICAL SESSION	PS	Rational prescribing and prescription writing(workshop)

**Week Seven & Eight: MID-SEMESTER EXAM.**  
**Sunday 30 - 10 - 2016 & 6 - 11 - 2016**

**Week Nine: MID-SEMESTER VACATION.**  
**Sunday 13 - 11 - 2016.**

**Week Ten: DRUGS USED IN THE TREATMENT OF INFECTION 1.**  
**Sunday 20 - 11 - 2016.**

Type of activity	Code	Title of activity
Lecture 11	L11	Basic principles of antimicrobial chemotherapy
Lecture 12	L12	Antibacterial drugs
Seminar 6	S 6	Antimycobacterial drugs
VIRTUAL LAB	VL	Session 4

**Week Eleven: DRUGS USED IN THE TREATMENT OF INFECTION 2.**  
**Sunday 27 - 11 - 2016.**

Type of activity	Code	Title of activity
Lecture 13	L13	Antiviral drug   Antifungal drugs.
Lecture 14	L14	Antiprotozoal drugs   Anthelmintic drugs.
Seminar 7	S 7	Antiviral & Antifungal drugs (Application).
VIRTUAL LAB	VL	Session 5

**Week Twelve: THE PROCESS OF DRUG DISCOVERY | PHARMACOGENOMICS AND PERSONALISED MEDICINE.**  
**Sunday 4 - 12 - 2016.**

Type of activity	Code	Title of activity
Lecture 15	L15	The drug discovery phase preclinical and clinical development
Lecture 16	L16	Epidemiological factors and interindividual variation of drug response
Seminar 8	S 8	Dietary supplements & herbal medicine.
VIRTUAL LAB	VL	Session 6

**Week Thirteen: ADVERSE DRUG REACTIONS.**  
**Sunday 11 - 12 - 2016.**

Type of activity	Code	Title of activity
Lecture 17	L17	Drugs during perinatal, pediatric and geriatric stages
Lecture 18	L18	Classification of adverse drug reactions & toxicity tests.
Seminar 9	S 9	Environmental toxins



VIRTUAL LAB	VL	Session 7
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**Week Fourteen: ANTI-INFLAMMATORY AND ANTICANCER DRUGS.**
**Sunday 18 - 12 - 2016.**

Type of activity	Code	Title of activity
Lecture 19	L 19	Anti-inflammatory drugs (NSAIDs & corticosteroids)
Lecture 20	L 20	Anticancer drugs
Seminar 10	S 10	NSAIDs and hypertension.
VIRTUAL LAB	VL	Session 8

**Week Fifteen: DRUGS ACTING IN THE AUTONOMIC NERVOUS SYSTEM.**
**Sunday 25 - 12 - 2016.**

Type of activity	Code	Title of activity
Lecture 21	L21	Adrenergic Agonists
Lecture 22	L22	Adrenergic Antagonists
Seminar	S	Review
VIRTUAL LAB	VL	Session 9

**Week Sixteen: DRUGS ACTING IN THE AUTONOMIC NERVOUS SYSTEM.**
**Sunday 1 - 1 - 2017.**

Type of activity	Code	Title of activity
Lecture 23	L23	Cholinergic Agonists
Lecture 24	L24	Cholinergic Antagonists
Seminar	S	Review
VIRTUAL LAB	VL	Review

**Week Seventeen: Final practical exam**
**. Sunday 8 - 1 - 2017.**
**Week Eighteen: Final written exam**
**. Sunday 15 - 1 - 2017.**

Assessment of students will employ a battery of assessment tools that are fit-for-purpose and reliable. Knowledge will be assessed through MCQ-type written exam and computer-based spotter exam. These will be conducted at the middle of the block & at its end. In addition to the mid-block written exam, continuous assessment will be done through the evaluation of performance in seminars and through assignments.

**Schedule of assessment tasks for students during the course**

	Assessment task	Week Due	% of Total Assessment
1	Midterm Exam	8	30
2	Spotter exam	10	10



3	Final Written Exam	15	40
4	OSPE& Assignments	15	20

**Recommended Reading Material:**

1. Pharmacology, sixth edition by H. P. Rang, M. M. Dale, J. M. Ritter and P. K. Moore
2. Pharmacological Reviews, Black Well, N.Y.
3. Rang & Dale's Pharmacology, with STUDENT CONSULT Online Access, 7th Edition, 2011.
4. Lippincott's Illustrated Reviews Pharmacology, 5th Edition, 2011.
5. Clinical Pharmacology, International Edition, 11th Edition
6. Bertram G. Katzung, Basic & Clinical Pharmacology, 9th Edition, McGraw-Hill Education (2012)
7. Goodman and Gillman, The Pharmacological basis of therapeutics, Tenth Edition. New York, NY McGraw-Hill Companies, Inc., (2011)

**Recommended electronic resources:**

**www. Pharmacology2000**

1. [www.cardiovascularpharm.com](http://www.cardiovascularpharm.com)
2. <http://en.wikipedia.org>
3. **access Medicine**
4. **Images. MD**
5. **The Medical letter on drugs and therapeutics**