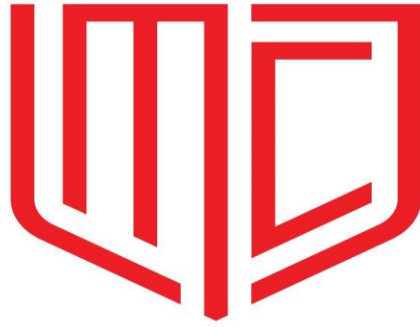




LAHORE
MEDICAL & DENTAL
COLLEGE

STUDY GUIDE

DEPARTMENT OF PHARMACOLOGY



***LAHORE MEDICAL AND DENTAL COLLEGE,
LAHORE***

Mission of LMDC

The Lahore Medical & Dental College is committed in its pursuit of excellence to providing the best academic facilities and atmosphere to its students.

Our mission is to: “Train future leaders of medicine who set new standards in knowledge, care and compassion”.

The well qualified and committed faculty of LMDC provides combination of nurturing support and challenge to the students to reach their maximum potential.

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1. Departmental Faculty & Staff

Sr. #	Name	Designation	Qualification	Pictures
1	Dr. Ajaz Fatima	Professor HOD	MBBS, M.Phil	
2	Dr. Shazia Asim	Professor	MBBS, M.Phil	
3	Dr. Asia Firdous	Associate Professor	MBBS, M.Phil	
4	Dr. Ghulam Ovais Qarni	Senior Lecturer	MBBS, M.Phil (Part 1)	
5	Dr. Rubina Raza	Demonstrator	MBBS	
6	Dr. Amina Zubair	Demonstrator	MBBS M.Phil (Part 1)	

7	Dr. Bushra Haider	Demonstrator	MBBS	
8	Dr. Arooma Majid	Demonstrator	MBBS	
9	Dr. Kasim Yar Hiraj	Demonstrator	MBBS	

2. Introduction Rationale of Subject:-

It is the science that deals with the origin, nature, chemistry, effects, and uses of drugs. It includes pharmacognosy, pharmacokinetics, pharmacodynamics, pharmacotherapeutics and toxicology.

Teaching in Year

3rd Year M.B.B.S

Duration of Course

One Year

Starting from 12th of February 2024 to November 2024.

3. **Learning Objectives: -**

MBBS student, at the end of one year training in Pharmacology, is expected to:

1. Understand pharmacokinetic and pharmacodynamic principles involved in the use of drugs
2. Understand and identify the various factors that can affect the action of drugs
3. Know the various routes of drug administration with advantages and disadvantages of the various routes
4. Undertake dosage calculations as appropriate for the patient and be able to select the proper drug and dose for the at risk population i.e. patients with kidney or liver disease, elderly, pregnant and lactating females, and children.
5. Understand the importance of rational prescribing of drugs and the concept of essential drugs
6. To be able to identify and monitor adverse drug reactions (ADRs) and appreciate the importance of ADR reporting
7. Know the drugs used in systemic illnesses, infections and chemotherapy etc. with main mechanism(s) of action, pharmacokinetics, uses, side-effects and indications
8. Understand the principles and practice of pharmacy
9. Understand the methods in experimental pharmacology, principles of bioassay and be able to correlate drug effects with the action of drugs at the receptors.
10. Have knowledge of common drugs and doses used for different ailments
11. Have an understanding of basic mechanism by which a drug acts
12. Should be able to select rationally from the available drugs

4. Syllabus (PMDC/ UHS)

Topic

General Pharmacology

Introduction

Routes of Administration

Transport across cell membrane

Absorption+ Bioavailability

Distribution

Biotransformation

Excretion, 1/2 Life, Kinetics

Pharmacodynamics

Dose response curve + Therapeutic Index

Drug allergy & Adverse effects

Drug dependence, addiction

Posology

Pharmacogenetics

Bioassay & Standardization

Locally acting drugs & Chelating agents

Disinfectants & Antiseptics + Phenol Chemo

Autonomic Nervous System

Introduction

Cholinergic Drugs

Anticholinergic Drugs

Muscle Relaxants

Ganglion Blockers

Catecholamines

Non-Catecholeamines

Beta Blockers

Alpha Blockers

Adrenergic Neuron Blockers

Ergot Alkaloids & Bromocryptine

GIT Drugs

Bitters & Sialogogues

Emetics & Anti emetics

Purgatives & Laxatives

Treatment of P.U & Antacids

Anti diarrheals & Bacillary Dysentery

Respiratory System Drugs

Mucolytics, Expectorants & Antitussives

Bronchodilators & Treatment of Asthma

Cardiovascular System Drugs

Vasodilators: Direct & Ca^{++} Channel Blockers
Antihypertensive drugs & Treatment of Hypertension
ACE Inhibitors
Antianginal Drugs
Treatment of CCF
Anti arrhythmic Drugs
Diuretics

DRUGS ACTING ON BLOOD

Antihyperlipidemic Drugs
Coagulants, Anti coagulants & Thrombolytic agents
Anti Platelets
Treatment of Anemia (Vitamins & Iron)

Autocoids:-

Histamine & Anti histamine
Prostaglandins & Serotonins

Drugs acting on CNS

Introduction
General Anesthetics
Local Anesthetics
Anti-Psychotic drugs
Antidepressants
Antimaniacs
Anti Parkinsonian Drugs
Sedative & Hypnotics + Anti-anxiety Drugs
Alcohol & Drug abuse
Treat narcotic Analgesics
Non-narcotic Analgesics
Treatment of Rheumatoid arthritis
Treatment of Epilepsy
CNS Stimulants & Xanthines
Treatment of gout
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Drugs acting on Endocrine System

Pituitary hormones & Parathyroid drugs
Anti-thyroid
Corticosteroids
Antidiabetic Drugs (Insulin, Oral Hypoglycemic)
Sex Hormones, Contraceptives & Drugs for fertility
Drugs acting on uterus

Therapeutics

Antibiotics: Introduction

Cell wall synthesis inhibitors

Penicillins & Cephalosporins
Bacitracin, Vancomycin, Monobactam,
carbapenems, aztreonam

Protein Synthesis Inhibitors

Aminoglycosides
Macrolides
Tetracyclines & Chloramphenicol

Antifolates Drugs

Sulphonamides & Cotrimoxazole+
Trimethoprim and Pyrimethamine

DNA Synthesis Inhibitors

Urinary Antiseptics & Quinolone derivatives
Anti-Cancer Drugs
Anti-Viral Drugs
Antifungal Drugs
Anti TB & Leprosy drugs
Antimalarial
Anti-amoebic Drugs
Anthelmintics

Miscellaneous Topics

Treatment of Edema, Shock, & plasma Expanders
Immuno modulators & Anti-D
Drug Interactions

PRACTICALS

A) Experimental pharmacology exercise on isolated organ - Assay of various drugs using rabbit ileum - Identification of unknown drugs by evaluating its action antagonism and drug interaction on rabbit ileum - Determination of concentration of unknown drug solution by different methods

B) Experimental exercise on pharmacy - General principles of pharmacy - Prescription writing exercises - Preparation and dispensing of powders, emulsions ointments, mixtures, liniments, suppositories and syrups

C) Spotting exercise - Identify the commonly used items in Pharmacology

D) Exercises on drug interactions

5. Teaching & Learning Methodologies

- a) Interactive Lectures
- b) Tutorials
- c) Practicals
- d) Small Group Discussions
- e) Batch Wise Viva Voce
- f) Monthly bases tests (MCQ's and SEQ's)
- g) CME
- h) Long Tutorial Sessions
- i) Topic Wise Practice Test
- j) Using Latest Techniques of electronic facilities like Audio Visual and Multimedia
- k) Recommended E. Books

On- Line Teaching Methodology:-

We use latest technologies, high speed internet and software for on-line coaching/ teaching.

a) On-Line Classes / Lectures

We deliver on-line classes/ Lectures on google meet, Microsoft teams and google class room

b) On- Line Tutorials Classes

We conduct on-line tutorial classes on google meet, Microsoft teams and google class room

c) On- Line Practical Classes

We arrange on-line practical classes on google meet, Microsoft teams and google class room

d) On- Line Assignments

On-line Assignments on google meet, Microsoft teams and google class room

e) On- Line Test Conducting

We conduct on-line tests on class room (Google forms)

f) On- Line Notifications

On-line notifications on google calender, Microsoft teams and lmdc web portal

6. Learning Resources

Recommended Books:-

1. Goodman & Gilman's - The Pharmacological Basis of Therapeutics
2. Basic & Clinical Pharmacology by Bertram G, Katzung
3. Clinical Pharmacology by DR Lawrence, PN Bennett & MJ Brown
4. Essentials of Medical Pharmacology by K.D. Tripathi
5. Lippincott Illustrated Review Pharmacology

Technologies to be Used:-

- 1) We use latest technologies, high speed internet and software for on-line coaching/ teaching.
- 2) Text Books are the Most Important source to learn for this Subject
- 3) Hand Outs (by Senior Faculty Members)
- 4) E. Books (Available)
- 5) Multimedia (Power Point)
- 6) Tables of Drugs Chart
- 7) Discussions
- 8) Viva Voce type Practice
- 9) Departmental Library

7. Assessments Methods

Formative:-

- MCQ's and SEQ's type Test will be held at the end of the every topic.
- Viva Voce will be held at the end of every major topic.
- Assignments given, checked and marked for 10 marks
- Summer Vacation work (assignments type)
- Arrange CME's to build and improve their knowledge and skills

8. Formative and Summative Exam Rules and Regulation

a) Total Marks Distribution

Examination will be held at the end of the academic session.

Marks Distribution Scheme According to University of Health Sciences Rules and Regulation:-

Total Marks of the subject in Professional examination----**300 Marks**

Theory Examination:

- 65 Multiple Choice Questions (1 Mark for Each Question) -----65 Marks
- 10 short Essay Questions (7 marks for Each Question) -----70 Marks
- Internal Assessment -----15 Marks

Total Marks	150 Marks
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Oral//Practical & Viva Voce Examination:

Viva Voce Examination:

- Viva Voce will be held after Theory Examination
- Viva Voce (Internal Examiner): 40 marks and 05 marks for Note Book---- 45 Marks
- Viva Voce (External Examiner): ----- 40 Marks

OSPE Examination:-

- 06 Non-Observed Stations (Each Station having 05 Marks)----- 30 Marks
- Experimental Pharmacology: (Performance 10 marks, table viva 04 marks) 14 Marks
- Pharmacy Practical: (Performance 03 marks, table viva 03 marks) 06 Marks
- Internal Assessment: -----15 Marks

Total Marks:	150 Marks
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b) Attendance Required

- 75% Attendance is mandatory in (Lectures, Practical and Tutorials)
- A minimum 75% Attendance is required for eligibility to appear in Annual Examination according to University of Health Sciences, Lahore
- Attendance will be marked through the Bio- Metric Attendance Systems (thumb Impression) and also record in Attendance Registers.
- Absences due to Sickness/ Illness must be certified by a Medical Officer and approved by Principal and Head of Department also.

c) Pharmacology Study Teaching Hours:-

a) For 3rd Year M.B.B.S according to PMDC Rules: 306 Hours

b) Lectures: 162 Hours

c) Practical / Tutorial / Grand Tutorial: 144 Hours

9. Schedule/ Planner/ Timetable for the **Year 2023-2024**

Sr. NO:	Topics	Teachers	No. of Lectures	Dates
General Pharmacology				
1.	Introduction	Prof. Dr. Ajaz Fatima	1	
2.	Route of administration	Prof. Dr. Ajaz Fatima	2	
A- Pharmacokinetics				
3	Transport across cell membrane	Prof. Dr. Shazia Asim	1	
4	Absorption, Bioavailability	Prof. Dr. Shazia Asim	2	
5	Distribution	Prof. Dr. Ajaz Fatima	2	
6	Biotransformation	Prof. Dr. Shazia Asim	2	
7	Excretion, clearance	Associate. Prof. Dr. Asia Firdous	2	
8	Half-life kinetics	Associate. Prof. Dr. Asia Firdous	2	
B- Pharmacodynamics				
9	Receptors, Signalling mechanism	Prof. Dr. Shazia Asim	2	
10	Dose response curve	Prof. Dr. Shazia Asim	2	
11	Drug Antagonism types	Prof. Dr. Shazia Asim	1	
12	Adverse effects of drugs	Prof. Dr. Ajaz Fatima	2	
13	Drug Dependence	Dr. Awais Qarni	1	
14	Posology	Dr. Amina Zubair	1	
15	Pharmacogenetics	Prof. Dr. Ajaz Fatima	1	
16	Locally acting drugs + Chelating agents	Dr. Amina Zubair	1	
Autonomic Nervous System (ANS)				
A- Drugs acting on Parasympathetic System				
1	Introduction	Prof. Dr. Shazia Asim	1	

2	Para sympathomimetic Drugs	Prof. Dr. Shazia Asim	2	
3	Anti-muscarinic	Prof. Dr. Shazia Asim	2	
4	Neuromuscular blockers	Dr. Awais Qarni	1	
5	Ganglion blockers	Dr. Awais Qarni	1	
B- Drugs acting on Sympathetic System				
1	Sympathomimetics	Prof. Dr. Ajaz Fatima	3	
2	Alpha blockers	Associate. Prof. Dr. Asia Firdous	2	
3	Beta-blockers	Associate. Prof. Dr. Asia Firdous	2	
4	Adrenergic Blockers	Associate. Prof. Dr. Asia Firdous	1	
5	Centrally acting sympathoplegic	Prof. Dr. Ajaz Fatima	1	
6	Ergot Alkaloids	Prof. Dr. Ajaz Fatima	1	
Autacoids				
1.	Histamine and Anti- Histamine	Associate. Prof. Dr. Asia Firdous	1	
2.	Serotonin / drugs used in Migraine	Prof. Dr. Ajaz Fatima	1	
3.	Prostaglandins	Prof. Dr. Ajaz Fatima	1	
Gastrointestinal System (GIT)				
1	Emetics + Anti-emetics	Prof. Dr. Ajaz Fatima	2	
2	Purgatives + Laxatives	Dr. Awais Qarni	1	
3	Peptic ulcer + Antacids	Prof. Dr. Shazia Asim	3	
	Anti-diarrheal drugs + Dysentery	Associate. Prof. Dr. Asia Firdous	1	
Respiratory System				
1.	Mucolytics, Expectorants, Anti-tussive drugs	Dr. Awais Qarni	1	
2.	Asthma	Prof. Dr. Shazia Asim	2	
Cardiovascular System (CVS)				
1	Anti-hypertensive drugs	Prof. Dr. Ajaz Fatima	1	
2	ACE inhibitors	Prof. Dr. Ajaz Fatima	1	

3	Diuretics	Prof. Dr. Shazia Asim	3	
4	Vasodilators	Prof. Dr. Ajaz Fatima	1	
5	Calcium channel blockers	Prof. Dr. Ajaz Fatima	1	
6	Anti-anginal drugs	Associate. Prof. Dr. Asia Firdous	2	
7	Drugs used in CCF	Prof. Dr. Ajaz Fatima	2	
8	Anti-arrhythmic drugs	Prof. Dr. Shazia Asim	2	
Blood				
1.	Anti-hyperlipidemic drugs	Associate. Prof. Dr. Asia Firdous	2	
2.	Coagulants + Anti-coagulants	Dr. Awais Qarni	2	
3.	Thrombolytics	Dr. Awais Qarni	1	
4.	Anti-platelets	Dr. Awais Qarni	1	
5.	Anemia	Dr. Awais Qarni	2	
Central Nervous System (CNS)				
1	Sedative, hypnotics + Anti-anxiety drugs	Prof. Dr. Ajaz Fatima	2	
2	General Anaesthetics	Prof. Dr. Shazia Asim	3	
3	Local Anaesthetics	Prof. Dr. Ajaz Fatima	2	
4	Opioid Analgesics	Associate. Prof. Dr. Asia Firdous	2	
5	Epilepsy	Associate. Prof. Dr. Asia Firdous	2	
6	Anti-parkinsonism drugs	Prof. Dr. Shazia Asim	2	
7	Anti-psychotics	Prof. Dr. Ajaz Fatima	2	
8	Anti-depressant drugs	Prof. Dr. Ajaz Fatima	2	
9	Anti-manic drugs	Prof. Dr. Ajaz Fatima	1	
10	Alcohol + Drug abuse	Dr. Awais Qarni	2	
11	CNS stimulants + Xanthine derivatives	Dr. Awais Qarni	1	
12	NSAIDs	Prof. Dr. Shazia Asim	2	
13	Drugs used in Rheumatoid arthritis	Prof. Dr. Ajaz Fatima	1	

14	Drugs used in GOUT	Prof. Dr. Ajaz Fatima	1	
Endocrinology				
1	Drugs acting as Agonist and antagonist of Pituitary hormone	Dr. Awais Qarni	1	
2	Drugs acting as Agonist and antagonist Parathyroid hormone	Dr. Awais Qarni	1	
3	Drugs acting as Agonist and antagonist thyroid hormone	Associate. Prof. Dr. Asia Firdous	2	
4	Corticosteroids	Prof. Dr. Ajaz Fatima	2	
5	Anti-diabetic drugs	Dr. Awais Qarni	4	
6	Drugs acting as Agonist and antagonist Sex hormones,	Associate. Prof. Dr. Asia Firdous	2	
7	Hormonal Contraceptives	Associate. Prof. Dr. Asia Firdous	1	
8	Drugs acting on uterus	Prof. Dr. Ajaz Fatima	1	
9	Bone mineral haemostasis	Associate. Prof. Dr. Asia Firdous	2	
Chemotherapeutic Drugs				
1	Introduction to chemotherapy	Prof. Dr. Ajaz Fatima	1	
2	<u>Cell wall inhibitors</u> a) <u>Penicillins</u> b) <u>Cephalosporins</u> c) <u>Others</u>	Prof. Dr. Shazia Asim	3	
3	<u>Protein synthesis Inhibitors</u> a) Aminoglycosides b) Tetracyclines, chloramphenicol c) Macrolides, clindamycin and others	Associate. Prof. Dr. Asia Firdous	3	
4	Anti-folate drugs	Prof. Dr. Ajaz Fatima	2	
5	Quinolones (Typhoid Treatment) Drugs used in UTI	Prof. Dr. Ajaz Fatima	1	
6	Anti-TB + Leprosy	Prof. Dr. Shazia Asim	3	
7	Anti-fungal drugs	Associate. Prof. Dr. Asia Firdous	2	
8	Anti-malarial drugs	Prof. Dr. Ajaz Fatima	2	
9	Anti-amoebic drugs	Prof. Dr. Ajaz Fatima	2	

10	Anti-helminthics	Prof. Dr. Ajaz Fatima	2	
11	Anti-viral drugs	Dr. Awais Qarni	3	
12	Anti-cancer drugs	Associate. Prof. Dr. Asia Firdous	3	
13	Sexually Transmitted Diseases (PID)	Dr. Awais Qarni	1	
14	Immune modulators	Associate. Prof. Dr. Asia Firdous	2	
15	Antiseptics + Disinfectants	Dr. Awais Qarni	1	
16	Drug interactions	Prof. Dr. Ajaz Fatima	2	

Prof. Dr. Ajaz Fatima: 48

Prof. Dr. Shazia Asim: 41

Associate Prof. Dr. Asia Firdous: 35

Dr. Ghulam Awais Qarni: 23

Dr. Amina Zubair:

Prof. Dr. Ajaz Fatima

Head of Pharmacology Department
Lahore Medical & Dental College,
Lahore.

Time Table for 3rd Year MBBS (Weekly Schedule Pattern)

DEPARTMENT OF PHARMACOLOGY & THERAPEUTICS

Lahore Medical & Dental College, Lahore.

3rd Year MBBS Weekly Lectures Schedule

Date: 19-02-2024 to 23-02-2024

Day	TIME	TOPIC	TEACHER
Monday 19-02-2024	08:00 am 09:40 am		
Tuesday 20-02-2024	08:50 am 09:40 am		
	12.40 pm 01:30 pm		
Wednesday 21-02-2024	08:00 am 08:50 am		
Thursday 22-02-2024	08:00 am 08:50 am		
	11:50 am 12:40 pm		
Friday 23-02-2024	08:00 am 08:50 am		

Weekly Practical Schedule (Time: 01:30 PM to 03:00 PM)

Day	Batch	Practical Topic	Teacher
Monday 19-02-2024	C + D Practical		
	I + J Tutorial		
Tuesday 20-02-2024	A + B Practical		
	G + H Tutorial		
Wednesday 21-02-2024	I + J Practical		
	E + F Tutorial		
Thursday 22-02-2024	G + H Practical		
	C + D Tutorial		
Friday 23-02-2024 (11:30am- 01:00pm)	E + F Practical		
	A + B Tutorial		

Prof. Dr. Ajaz Fatima

Head of Pharmacology Department
Lahore Medical & Dental College,
Lahore.

10. Counseling

a) Career Guidance

b) Psychosocial Counseling

- Prof. Dr. Ajaz Fatima (Head of Department)
- Associate. Prof. Dr. Asia Firdous (Associate. Prof.)

They are nominated for career Guidance and psychosocial counseling and they are rotated/ changed after every three months.