



SILVER OAK UNIVERSITY
SILVER OAK COLLEGE OF PHARMACY (067)

Programme Name: D.Pharm (18)

Subject Name: Pharmacology

Subject Code: 1180672201

Year: II

Prerequisite:

This course provides basic knowledge about different classes of drugs available for the pharmacotherapy of common diseases. The indications for use, dosage regimen, routes of administration, pharmacokinetics, pharmacodynamics, and contraindications of the drugs discussed in this course are vital for successful professional practice.

Objective: This course will discuss about basic concepts of

1. General concepts of pharmacology including pharmacokinetics, pharmacodynamics, routes of administration, etc.
2. Pharmacological classification and indications of drugs
3. Dosage regimen, mechanisms of action, contraindications of drugs
4. Common adverse effects of drugs

Teaching and Examination Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
4	1	2	7	7

Content:

Unit No.	Contents	Teaching Hours	Weightage %
1	General Pharmacology <ul style="list-style-type: none">• Introduction and scope of Pharmacology• Various routes of drug administration - advantages and disadvantages• Drug absorption - definition, types, factors affecting drug absorption • Bioavailability and the factors affecting bioavailability• Drug distribution - definition, factors affecting drug distribution• Biotransformation of drugs - Definition, types of biotransformation reactions, factors influencing drug metabolisms• Excretion of drugs - Definition, routes of drug excretion	10	13%

	<ul style="list-style-type: none"> • General mechanisms of drug action and factors modifying drug action 		
2	<p>Drugs Acting on the Peripheral Nervous System</p> <ul style="list-style-type: none"> • Steps involved in neurohumoral transmission • Definition, classification, pharmacological actions, dose, indications, and contraindications of <ul style="list-style-type: none"> a) Cholinergic drugs b) Anti-Cholinergic drugs c) Adrenergic drugs d) Anti-adrenergic drugs e) Neuromuscular blocking agents f) Drugs used in Myasthenia gravis g) Local anaesthetic agents h) Non-Steroidal Anti-Inflammatory drugs (NSAIDs) 	11	15%
3	<p>Drugs Acting on the Eye</p> <p>Definition, classification, pharmacological actions, dose, indications and contraindications of</p> <ul style="list-style-type: none"> • Miotics • Mydriatics • Drugs used in Glaucoma 	02	3%
4	<p>Drugs Acting on the Central Nervous System</p> <p>Definition, classification, pharmacological actions, dose, indications and contraindications of</p> <ul style="list-style-type: none"> • General anesthetics • Hypnotics and sedatives • Anti-Convulsant drugs • Anti-anxiety drugs • Anti-depressant drugs • Anti-psychotics • Nootropic agents • Centrally acting muscle relaxants • Opioid analgesics 	08	11%
5	<p>Drugs Acting on the Cardiovascular System</p> <p>Definition, classification, pharmacological actions, dose,</p>	06	8%

	<p>indications and contraindications of</p> <ul style="list-style-type: none"> • Anti-hypertensive drugs • Anti-anginal drugs • Anti-arrhythmic drugs • Drugs used in atherosclerosis and • Congestive heart failure 		
6	<p>Drugs Acting on Blood and Blood Forming Organs Definition, classification, pharmacological actions, dose, indications and contraindications of</p> <ul style="list-style-type: none"> • Hematinic agents • Anti-coagulants • Anti-platelet agents • Thrombolytic drugs 	04	5%
7	<p>Definition, classification, pharmacological actions, dose, indications and contraindications of</p> <ul style="list-style-type: none"> • Bronchodilators • Expectorants • Anti-tussive agents • Mucolytic agents 	02	3%
8	<p>Drugs Acting on the Gastro Intestinal Tract Definition, classification, pharmacological actions, dose, indications and contraindications of</p> <ul style="list-style-type: none"> • Anti-ulcer drugs • Anti-emetics • Laxatives and purgatives • Anti-diarrheal drugs 	05	7%
9	<p>Drugs Acting on the Kidney Definition, classification, pharmacological actions, dose, indications, and contraindications of</p> <ul style="list-style-type: none"> • Diuretics • Anti-Diuretics 	02	3%
10	<p>Hormones and Hormone Antagonists Physiological and pathological role and clinical uses of</p> <ul style="list-style-type: none"> • Thyroid hormones • Anti-thyroid drugs • Parathormone • Calcitonin 	08	11%

	<ul style="list-style-type: none"> • Vitamin D • Insulin • Oral hypoglycemic agents • Estrogen • Progesterone • Oxytocin • Corticosteroids 		
11	Autocoids <ul style="list-style-type: none"> • Physiological role of Histamine, 5 HT and Prostaglandins • Classification, clinical uses and adverse effects of antihistamines and 5 HT antagonists 	3	4%
12	Chemotherapeutic Agents: Introduction, basic principles of chemotherapy of infections, infestations and neoplastic diseases, Classification, dose, indication and contraindications of drugs belonging to <ul style="list-style-type: none"> • Penicillins • Cephalosporins • Aminoglycosides • Fluoroquinolones • Macrolides • Tetracyclines • Sulphonamides • Anti-tubercular drugs • Anti-fungal drugs • Anti-viral drugs • Anti-amoebic agents • Anthelmintics • Anti-malarial agents • Anti-neoplastic agents 	12	16%
13	Biologicals Definition, types and indications of biological agents with examples	02	3%

Course Outcome:

Sr. No.	CO statement
CO-1	. Describe the basic concepts of pharmacokinetics and pharmacodynamics
CO-2	Enlist the various classes and drugs of choices for any given disease condition
CO-3	Advise the dosage regimen, route of administration and contraindications for a given drug
CO-4	Describe the common adverse drug reactions

Teaching & Learning Methodology: -

The various methods or tools follows by the faculties to teach the above subject are:

1. Chalk and board method
2. Experiential learning.
3. Power point presentation and slide show method

List of Tutorials/Experiments:

Animals shall not be used for doing / demonstrating any of the experiments given. The given experiments shall be carried-out / demonstrated as the case may be, ONLY with the use of software program(s).

1. Study of local anaesthetics on rabbit eye
2. Study of Mydriatic effect on rabbit eye
3. Study of Miotic effect on rabbit eye
4. Effect of analgesics using Analgesiometer
5. Study of analgesic activity by writhing test
6. Screening of anti-convulsant using Electro Convulsimeter
7. Screening of Muscle relaxants using Rota-Rod apparatus
8. Screening of CNS stimulants and depressants using Actophotometer
9. Study of anxiolytic activity using elevated plus maze method
10. Study of effect of drugs (any 2) on isolated heart
11. Effect of drugs on ciliary motility on frog's buccal cavity
12. Pyrogen testing by rabbit method

Assignment

The students shall be asked to submit written assignments on the following topics (One assignment per student per sessional period. i.e., a minimum of THREE assignments per student)

1. Newer techniques in experimental pharmacology
2. Introduction to High Throughput screening
3. Introduction to ELISA test
4. Intro to Allergy Testing
5. Intro to Toxicity Studies
6. Drugs available as paediatric formulations
7. Drug Facts Labels of USFDA
8. Antimicrobial Resistance
9. Introduction to Bioassays
10. Pre-clinical studies in new drug development Collection of newspaper clips (minimum 5) relevant to any one topic and its submission in an organized form with collective summary based on the news items
11. Read a minimum one article relevant to any theory topic, from Pharma /Science/ or other Periodicals and prepare summary of it for submission
12. Mental health and its significances among the various segments of the society
13. Potential roles of pharmacists in rural India

Books Recommended: - (minimum 3 books)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchill Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews- Pharmacology
6. K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R.Craig & Robert,
9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
10. Kulkarni SK. Handbook of experimental pharmacology. VallabhPrakashan,

List of Open Source Software/learning website:

- <http://silveroakuni.ac.in/video-lecture>
- <https://nptel.ac.in/>
- <https://nptel.ac.in/courses/112/105/112105124/>