INSTITUTE	**FACULTY OF PHARMACY**
PROGRAM	**BACHELOR OF PHARMACY**
SEMESTER	**4**
COURSE TITLE	**PHARMACOLOGY-I**
COURSE CODE	**13PH0404**
COURSE CREDITS	**6**

Objective:

1 The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs like, mechanism of action, physiological and biochemical effects (pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.

2 The main purpose of the subject is to understand what drugs do to living organisms and how their effects can be applied to therapeutics. The subject covers information about the drugs like mechanism of action, physiological and biochemical effects (pharmacodynamics) as well as absorption, distribution, metabolism, and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.

Course Outcomes: After completion of this course, student will be able to:

1 Understand the pharmacological actions of different categories of drugs

2 Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels

3 Apply the basic pharmacological knowledge in the prevention and treatment of various diseases

4 Observe the effect of drugs on animals by simulated experiments

5 Appreciate correlation of pharmacology with other bio medical sciences

6 Understanding of general pharmacology concepts

Pre-requisite of course: The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs like, mechanism of action, physiological and biochemical effects (pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	1	4	75	15	10	35	15

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Contents : Unit	Topics	Contact Hours
1	**General Pharmacology** a.Introduction to Pharmacology-Definition, historical landmarks and scope of pharmacology,natureandsourceofdrugs,essentialdrugsconceptandroutesof drug administration, Agonists, antagonists(competitive and noncompetitive), spare receptors, addiction, tolerance, dependence, tachyphylaxis, idiosyncrasy, allergy.b.Pharmacokinetics-Membrane transport, absorption,distribution, metabolism and excretion of drugs .Enzyme induction, enzyme inhibition, kinetics of elimination	
2	**General Pharmacology** a.Pharmacodynamics-Principles and mechanisms of drug action. Receptor theories and classification of receptors, regulation of receptors. drug receptors interactions signal transduction mechanisms, G-protein–coupled receptors, ion channel receptor, transmembrane enzyme linked receptors, transmembrane JAK-STAT binding receptor and receptors that regulate transcriptionfactors, dose response relationship, therapeutic index, combined effects of drugs and factors modifying drugaction.b.Adverse drugreactions.c.Drug interactions (pharmacokinetic andpharmacodynamic)d.Drug discovery and clinical evaluation of new drugs -Drug discovery phase, preclinical evaluation phase, clinical trial phase, phases of clinical trialsandpharmacovigilance.	
3	**Pharmacology of drugs acting on peripheral nervous system** a. Organization and function of ANS.b.Neurohumoraltransmission,co-transmissionandclassificationof neurotransmitters .Parasympathomimetics,Parasympatholytics, Sympathomimetics, sympatholytics.d.Neuromuscular blocking agents and skeletal muscle relaxants(peripheral).e.Local anestheticagents.f.Drugs used in myasthenia gravis and glaucoma	
4	**Pharmacology of drugs acting on central nervous system** .Neurohumoral transmission in the C.N.S.special emphasis on importance of various neurotransmitters like with GABA, Glutamate, Glycine, serotonin, dopamine.b.General anesthetics andpre-anesthetics.c.Sedatives, hypnotics and centrally acting musclerelaxants.d.Anti-epilepticse.Alcohols anddisulfiram	
5	**Pharmacology of drugs acting on central nervous system** Pharmacology of drugs acting on central nervous systema.Psychopharmacological agents: Antipsychotics, antidepressants, anti-anxiety agents, anti-manics andhallucinogens.b.Drugs used in Parkinsons disease and Alzheimer’sdisease.c.CNS stimulants andnootropics.d.Opioid analgesics andantagonistse.Drug addiction, drug abuse, tolerance and dependence.	
Total Hours		

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**lab** Experiment no.1, Experiment no.2, Experiment no.3, Experiment no.4, Experiment no.5, Experiment no.6, Experiment no.7, Experiment no.8, Experiment no.9, Experiment no.10, Experiment no.11, Experiment no.12, Experiment no.13, Experiment no.14, Experiment no.15	
2	**Workshop** Workshop no.1, Workshop no.2, Workshop no.3, Workshop no.4, Workshop no.5, Workshop no.6, Workshop no.7, Workshop no.8, Workshop no.9, Workshop no.10, Workshop no.11, Workshop no.12, Workshop no.13, Workshop no.14, Workshop no.15	
Total Hours		

Textbook :

1 K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers, Medical Publishers (P) Ltd, New Delhi., 1985

References:

1 Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology,.Churchil Livingstone Elsevier

2 Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata McGraw-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 PharmacologyPhysical Pharmaceutics by Ramasamy C, and ManavalanR.

6 Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher

7 Modern Pharmacology with clinical Applications, by Charles R.Craig&Robert

8 Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.

9 Kulkarni SK. Handbook of experimental pharmacology. VallabhPrakashan

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
35.00	25.00	20.00	15.00	10.00	0.00

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Instructional Method:

1 The course delivery method will depend upon the requirement of content and the need of students. The teacher in addition to the conventional teaching method by the blackboard may also use any tools such as demonstration, role play, quiz, brainstorming, MOOCs etc.

2 The internal evaluation will be done based on continuous evaluation of students in the laboratory and classroom.

3 Students will use supplementary resources such as online videos, NPTEL videos, MOOCs/ e-courses, virtual laboratories.

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