

Subject Code: 1PH1010405	Subject Title: Basic concepts of pharmacology and clinical pharmacy practice
Pre-requisite Subject	- NONE -

Objectives of course:

1. To learn about basic principles of pharmacology like how the drug produces effect and what factors play role in producing the drug effects.
2. To provide sound knowledge about sources of drugs, routes of drug administrations, pharmacokinetics, pharmacodynamics, receptor mechanisms, drug interactions and adverse drug reactions.
3. Understand the elements of clinical pharmacy, drugs used in children, elders and pregnancy.
4. To learn basic concepts of pharmacovigilance, patient counselling, medication adherence, rational drugs use etc.

Learning outcomes:

The student should be able to:

1. Define and explain the various terminologies pertaining to the subject.
2. Explain the basic principles of Pharmacokinetics, Pharmacodynamics, Drug interactions and adverse drug reactions.
3. Narrate the principles involved in measurement of drug effects and importance of route for drug administration.
4. Understand the importance of patient counselling, pharmacovigilance, medication adherence, rational drugs use.

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)					
Lecture	Tutorial	Practical	Credit	Theory(T)		Practical(P)		Total Marks	
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	Theory	Practical
3	NA	NA	3	80	20	NA	NA	100	NA

Subject Contents

Sr. No.	Topic	Total Hours	Weight (%)
1	Define following terms: Pharmacy, Pharmacology, Clinical pharmacy, Clinical Pharmacology, Pharmacokinetics, Pharmacodynamics, Pharmacoepidemiology, Pharmacoconomics, Pharmacogenomics, Therapeutics, Toxicology, Chemotherapy, Pharmacopoeia, Drug, Medicine, Poison, Drug tolerance, Tahcyphylaxis. Introduction and scope of pharmacology and clinical pharmacy, Nature and sources of drugs, Drug nomenclature, Routes of drug administration.	4	9%
2	Pharmacokinetics: (A) Biological membrane, mechanism of drug transportation, Absorption, factors affecting absorption, Distribution, volume of distribution, redistribution, penetration into brain, passage across placenta, plasma protein binding, tissue storage, Metabolism/biotransformation, Phase-I and Phase-II reactions, microsomal enzymes and their induction, Excretion, mechanism of renal excretion, enterohepatic circulation. (B) Area under curve (for single dose and repeated dose), Bioavailability and bioequivalence, Plasma half life and Clearance, Loading dose and maintenance dose, Therapeutic drug monitoring (TDM) and its significance.	12	27%

3	Pharmacodynamics: Principle of drug action, Target of drug action–receptors, ion channels, enzymes, transport proteins, Introduction to various types of receptor-ligand gated ion channel, G-protein coupled receptor, kinase linked receptor, nuclear receptor, Introduction to various types of ion channels- open channels and gated channels, Dose response relationship, Agonist and antagonist, Combined effects of drugs (potentiation, addition, synergism and antagonism), Drug antagonism	9	20%
4	Modification in effects of drugs with special reference to Children, elders and pregnancy.	4	9%
5	Drug interaction: Classify drug interaction based on mechanisms (pharmacokinetic types and Pharmacodynamic types), drug food interaction.	3	7%
6	Adverse drug reactions: Brief outline on followings terminology related to adverse effects-side effects, overdose effects, secondary effects, toxic effects, intolerance, drug allergy, iatrogenic effects, mutagenicity, teratogenicity, carcinogenicity, photosensitivity, drug withdrawal reactions, drug dependence Classify ADR as per Rawlins-thompson system, Pharmacovigilance and epidemiological methods in ADR detection, Medication errors and adverse drug events.	7	15%
7	Patient counselling, communication skills for effective counselling, steps for patient counselling, Medication adherence and non-adherence, determinants of medication non-adherence, Drug information and poison information.	4	9%
8	Concept of essential medicines and rational drugs use, essential medicines list, Standard Treatment Guidelines, Drug and Therapeutics Committee	2	4%

List of References:

1. Clinical pharmacy and therapeutics. Roger Walker and Cate Whittlesea.
2. Pharmacology and pharmacotherapeutics .Satoskar, R.S. and Bhadarkar, S.D.
3. Rang & Dale's pharmacology. Rang H.P, Dale M.M, J.M, R.J.
4. Goodman Gilman, A., Rall, T.W., Nies, A.I.S. and Taylor, P. The pharmacological Basis of therapeutics.
5. Basic and clinical pharmacology. Katzung, B.G. Latest edition.
6. Essentials of Medical Pharmacology. K.D. Tripathi.
7. Principles of Pharmacology. HL Sharma. KK Sharma.
8. A textbook of clinical pharmacy practice. G. Parathsarthee, K. Nyfort-Hansen and M. C. Nahata.
9. Essentials of Pharmacotherapeutics. F.S.K. Barar.

Text Books:

1. Elements of Pharmacology. Dr. R.K. Goyal.

e-Resources:

1. Some pharmacology books are available on websites. Latest information's are available from scientific journals available in library and on websites.