



Semester - V

BRANCH	Subject Title	Subject Code
B.Sc. (Chemistry)	Pharmaceutical and Medicinal Chemistry	CHDSE1-151

Course Learning outcomes (CLO) -

After successfully competing this course module students will be able to:

- Understand importance of pharmaceutical chemistry and pharmacopeia.
- Learn intellectual property rights, patents trademark and copyright.
- Understand Definition, Classification of the drugs with examples and structures
- Describe the structure activity relation of some important class of drugs.
- Describe the overall process of drug discovery and the role played by medicinal chemistry in this process.
- Relate the structure and physical properties of drugs to their pharmacological activity.
- Explain physio-chemical properties related to QSAR.

CONTENT

Unit - I

Pharmaceutical Chemistry

Introduction to pharmacy, career in pharmacy, codes of pharmaceutical ethics, importance of pharmaceutical chemistry, pharmacopeia and its history (IP, BP, USP, NF).

Drug and cosmetic act with special reference to schedule M, GMP, GLP, GCP, USFDA, NDA, clinical trial.

Concept of quality and total quality management, quality assurance and quality control, IPQA, IPQC.

Documentation and maintenance of record, intellectual property rights, patents, trademark, copyright, patent act.

Unit - II

Pharmacognosy

Definition, history, scope and development of Pharmacognosy.

Classification and Sources of drugs: classification of drugs, sources and uses of natural drug products. biological (plants, animals and microbes), geographical. marine and mineral sources.

Drug Receptors: Introduction to drug receptors, nature of drug receptors, different bonding involved in drug-receptor interaction, drug receptor theories.

Drug absorption: routes of drug administration, absorption of drugs and factors affecting absorption.

Unit - III

Molecular Modeling and Drug Design

Drug design and development an overview, analogues and prodrugs structure and activity relationship between chemical (SAR), factors governing drug design. approaches to drug design, receptor site theory, introduction to combinatorial synthesis in drug discovery. factors affecting bioactivity. QSAR-Free-Wilson analysis, structure a biological activity Hansch analysis, relationship between Free-Wilson analysis and Hansch analysis.



Unit – IV

Antibiotics and Antibacterials

Introduction, Antibiotic B-Lactam Type - Penicillin, Cephalosporins, Antitubercular - Streptomycin, Broad Spectrum Antibiotics - Tetracyclines, Anticancer Dactinomycin (Actinomycin D)

Unit – V

Antifungal and Non-steroidal Anti- inflammatory Drugs

Antifungal: Polyenes. Antibacterial - Ciprofloxacin, Norfloxacin, Antiviral Acyclovir Antimalarials: Chemotherapy Malaria SAR, Chloroquine, Chloroguanide and Mefloquine.

Non-steroidal Anti-inflammatory Drugs: Diclofenac Sodium, Ibuprofen and Netopam.

Practical's

Unit – I

1. Preparation of Pharmaceutical compounds -

- a) Acetanilide
- b) Aromatic water
- c) Lotion
- d) Aspirin

Unit – II

2. Preparation of pharmaceutical compound

- a) Tincture Iodine
- b) Alum
- c) Ferrous Ammonium sulphate
- d) Antimony potassium tartrate

Unit - III

- 3. Isolation of caffeine from tea leaves.
- 4. Extraction of active constituents from extraction method.



Unit – IV

5. Identification of crude drug.
6. Morphology of turmeric, ginger, Mentha.

Unit - V

7. Preparation of suspension. Emulsions, ointment.
8. Preparation of simple syrup as per IP and USP.
9. Preparation of pharmaceutical buffer and study of its theoretical and calculated PH.
10. Inorganic preparation of compounds like Zinc Oxide. calcium carbonate. Magnesium Carbonate.