

SARDAR PATEL UNIVERSITY
Programme: MSC (Pharmaceutical Chemistry)
Semester: III
Syllabus with effect from: June 2010

Paper Code: PS03CPCH01	Total Credits: 4
Title Of Paper: Drug Design and Development	

Unit	Description in detail	Weightage (%)
1	Quantitative Structure Activity Relationship (QSAR): Introduction, Graphs and Equation, Physicochemical properties like Hydrophobicity, Electronic effects, steric effects. Hansch equation, Craig plot, Topliss scheme, Bioisosteres, Planning QSAR studies, 3D – QSAR: Introduction, Definition of steric and electrostatic fields, Relating shape and electronic distribution with biological activity, Hydrophobic potential, Advantages of 3D – QSAR over 2D – QSAR, Case study.	25 %
2	Drug Discovery and Development: Drug Discovery: Introduction, Irrational approach, Rational Approach, Antisense approach. Principles of Drug design Finding a lead Drug Design – optimizing target interaction, Identify structure – activity relationship (SARs), Binding role of various functional groups, Identify the pharmacophore, Strategies in drug design, Computer aided drug design(in brief). Drug Development: Preclinical and clinical study, Patenting and regulatory affairs, Chemical and process development, Design a manufacturing process, Register and market the drug	25 %
3	Drug design – optimizing access to the target: Improve absorption, Making drugs more resistant to chemical and enzymatic degradation, Making drugs less resistant to drug metabolism, Targeting drugs, Reducing toxicity, Pro-drug, Endogenous compounds as a drug. Protein as – drug target: Protein – drug interaction(viz. Intramolecular bonding forces), Drug action at protein, Peptide or protein as drugs	25 %
4	Enzymes & Receptor as – drug target: Enzymes as – drug target: Enzymes as catalyst, The active sites of an enzymes, Substrate binding at active sites, Enzymes inhibitors: Mechanism based enzyme inactivators, examples. Receptor as – drug target: Introduction to receptor & Receptors role	25 %

Basic Text & Reference Books:

- **An Introduction to Medicinal Chemistry;** G.L. Patrick, 2nd Ed., Oxford University Press, ISBN 0-19-850533-7.
- **Foye's Principles of Medicinal Chemistry,** 5th edition, David A. Williams, Thomas L. Lemke, Lippincott Williams & Wilkins publisher - a Walter kluwer business, ISBN – 13: 978-81-89836-02-3 ISBN – 10: 81-89836-02-1. ISBN: 0-7817-4211-0.
- **Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry,** 11th edition, John H.Block, John M. Beale, Jr., Lippincott Williams & Wilkins publisher - a Walter kluwer business, ISBN – 0-7817-3481-9
- **Medicinal chemistry – A biochemical Approach** by T. Nogradyedey, Oxford University Press, New York, Oxford, ISBN:13 978-0-19510455-4; 978-0-19-510456-1 (pbk.), ISBN 0-19-510455-2; 0-19-510456-0
- **The organic chemistry of Drug design and Drug action;** Richard B. Silverman, 2nd edition, Academic Press, ISBN: 0-12-643732-7.

