Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NCYD501	Medicinal Chemistry	3	0	0	3

Course Objective
• With this course student will learn the basics of medicinal chemistry and fundamental of drug discovery
Learning Outcomes
• By the end of this course, each student should be able to learn: • Knowledge on the fundamental principles of medicinal chemistry and, drug design. • Acquiring knowledge on the strategy of computer aided drug design and their application in modern drug discovery. • Apply the pharmacodynamic and pharmacokinetic principles that describe drug actions. • Basics of Intellectual property (IP) and Regulatory affairs. • Learning the art of synthesis of FDA approved drugs.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Basics of Drug Action– Enzymes, proteins, antagonist, agonist, Drug-receptor interactions, Drug action through enzyme inhibition, Examples based on kinase inhibition, Drug likeness, Pharmacokinetics, ADME, bioavailability and bioequivalence. Drug metabolism and elimination, Chirality and drug action.	12L	The basic of medicinal chemistry, drug action site, the enzyme inhibition and fundamentals of Pharmacokinetics and drug metabolism will be discussed in details
2	Drug Design-Ligand based drug design, Structure Activity Relationships studies from Hit identification to lead optimization, De Novo drug design techniques: Receptor/enzyme cavity size prediction. Pharmacophore concept: Pharmacophore mapping. Molecular docking, quantitative structure and relationship (QSAR). Informatics methods in drug design, bioinformatics, chemoinformatics.	12L	Acquiring knowledge on the strategy of computer aided drug design and their application in modern drug discovery will form the basic premise of this unit. Molecular docking and SGDD will be presented.
3	Classification of drugs- Based on structure or pharmacological basis with examples. antibacterials, antivirals, antifungal, anticancer agents, statins, antidiabetic drugs, cardiovascular drugs	13L	Classification of drugs based on their therapeutic areas will be discussed in detail. Areas of treatment and the pharmacological values will be presented.
4	Synthesis of Marketed Drugs. Introduction to Clinical trials, Fundamentals of Intellectual Property (IP) and regulatory affairs.	8L	The strategies of the drug molecules synthesis will be discussed.

Total		

Text Books:

1. The Organic Chemistry of Drug Design and Drug Action, R.B. Silverman, Academic Press.

Reference Books:

1. Medicinal Chemistry-An Introduction, Gareth Thomas, 2nd edition, 2007, Wiley, NY.
2. An introduction to medicinal Chemistry, Graham L. Patrick, 4th Edition, Oxford, 2009.