

Program Specific Outcomes - M. Pharmacy (Pharmaceutical Chemistry)

PSO.1 Detail knowledge about addition, elimination and substitution reaction mechanisms in organic chemistry; named reaction and various heterocyclic ring systems.

PSO.2 Systemic study, SAR, mechanism of action, synthesis and structural elucidation of various classes of agents.

PSO.3 In-depth knowledge about advances in organic chemistry, different techniques and develop synthetic routes of organic synthesis and their applications to process chemistry as well as drug discovery.

PSO.4 Knowledge about recent advances in the field of medicinal chemistry at the molecular level including different techniques for the rational drug design.

PSO.5 Detail knowledge about chemistry of medicinal compounds from natural origin and general methods of structural elucidation of such compounds.

PSO.6 Ability of isolation, purification and characterization of medicinal compounds from natural origin.

PSO.7 Knowledge on the current state of the art techniques involved in computer assisted drug design.

PSO.8 Knowledge with various hyphenated analytical instrumental techniques for identification, characterization, and quantification of drugs.

PSO.9 Deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs.

Course Outcomes

On completion of this course it is expected that students will be able to understand

SEMESTER – I

Advanced Organic Chemistry-I

CO1. To gain in-depth knowledge about SN1, SN2, E1, E2 and rearrangement reactions.

CO2. Structures, ring synthesis, reactions of heterocyclic compounds.

CO3. Structures, synthesis, reactions and applications of five membered heterocyclic rings.

Advanced Medicinal Chemistry-I

CO1. General aspects of drug design and development with respect to Pharmacological activity; approaches to lead discovery and analog design; concepts of screening; prodrugs; soft drugs; isosterism; recombinant DNA technology.

CO2. Correlation of physicochemical parameters affecting drug action and pharmacokinetics; able to differentiate SAR and QSAR; apply cheminformatics, bioinformatics on the designed molecules.

CO3. Study on origin, development, classification, structures, mechanism of action, SAR, uses and toxicity of histamine antagonists, Gastric-proton pump inhibitors, NSAIDs, Analgesics, Immuno agents Anticancer and Anti-viral agents.

Spectroscopic identification of organic compounds

CO1. To learn basic principle & instrumentation and a detailed study on applications of spectroscopic techniques in the determination of structure of various classes organic compounds.

CO2. Study on two dimensional NMR techniques like DEPT, COSY, HMQC, HETCOR, HMBC and TOCSY.

CO3. Problems solving and work out on structure determination.

Screening methods in Pharmacology

CO1. To learn the Principles and techniques involved in pharmacological screening against various activities.

CO2. To know the importance and applications of toxicokinetic Studies and Alternative methods to animal toxicity testing.

CO3. To infer the data using biostatistics technique like “t” test, ANOVA and chi square tests and other important tests.

SEMESTER - II

Advanced Organic Chemistry-II

CO1. Target selection, disconnection approach, functional group interconnection, reagents, synthons, retrosynthesis.

CO2. Strategies of organic synthesis like one group disconnection, two group disconnection, retromass fragmentation of studies of Disparlure, retronecine, lignofoline.

CO3. Importance of stereochemistry, concept of eutomer, distomer, stereoselective and stereospecific reactions.

CO4. Importance of green synthesis and its applications.

CO5. Synthesis, structure and its modification of six membered ring.

Advanced Medicinal Chemistry-II

CO1. Biochemical basis of mental disorders, abnormal protein factors, endogenous amines and related substances.

CO2. Screening methods, structure, SAR, mechanism of action, ring modifications of antipsychotics, anxiolytics, sedatives and hypnotics.

CO3. Mechanism of action, uses, toxicity of antidepressants and antiepileptics.

CO4. Anatomy and pharmacology of nephron, classification, mechanism of action, uses of diuretics, phosphodiesterases, antihyperlipidemics and quinolone antibiotics

Chemistry of Natural Products

CO1. Biological source, structure, peripheral groups, structural modifications, mechanism of action and toxicity of alkaloids

CO2. Structure, SAR, synthetic derivatives of natural anticancer agents,

CO3. History, industrial Development of steroid, nomenclature, numbering, SAR of steroids and steroidal hormones.

CO4. History, classification, structure, SAR of cephalosporins.

CO5. Structure elucidation of compounds by UV, IR, NMR(¹H,¹³C) and 2DNMR

Chromatographic Separation Technology

CO1. Theory and instrumentation, column materials, detectors of Gas Chromatography, High Pressure Liquid Chromatography, HPTLC.

CO2. Principle, methodology, advantages, disadvantages and applications of Paper chromatography, thin layer chromatography, super critical fluid chromatography.

CO3. Column chromatographic modifications like flash, vacuum liquid and medium pressure chromatographies, gel permeation technique

CO4. Theory, principle and applications of electrophoresis.