

GUJARAT TECHNOLOGICAL UNIVERSITY

B.Pharm
SEMESTER: VII

Subject Name: Pharmaceutical Chemistry – IX (Medicinal Chemistry - III)
Subject Code: 2270003

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	Theory		Practical	
				External	Internal	External	Internal
3	0	3	6	80	20	80	20

Theory

Sr No	Course Contents	Total Hrs
	Introduction, history, classification, nomenclature, mechanism of action, adverse effects, therapeutic uses, structure activity relationship (SAR) and synthetic procedures of selected drugs and recent developments of following categories to be covered.	
1	Chemotherapeutic Agents:	
	Antibacterial agents: • SAR: Sulphonamides, fluoroquinolones • Synthesis of sulphacetamide, sulphamethoxazole, Trimethoprim, Ciprofloxacin, Ofloxacin, Norfloxacin	4
	β-Lactam Antibiotics: • SAR: Penicillins, Cephalosporins,	4
	Tetracyclines, Aminoglycosides, Macrolides and Miscellaneous Antibiotics: • SAR: Aminoglycosides, Tetracyclines, Macrolides. • Synthesis of Chloramphenicol	6
	Antimycobacterial Agents: Synthesis: Ethambutol, Isoniazid, Pyrazinamide	3
	Antifungal Agents: Synthesis: Clotrimazole, Ketoconazole	2
	Antiprotozoal Agents: Antimalarial and Antiamoebic Agents • SAR: Quinolines • Synthesis: Chloroquine, Primaquine, Pyrimethamine. Metronidazole	4
	Anthelmintics: Synthesis: Albendazole, Mebendazole.	2
	Antiviral and Anti-HIV Agents: Synthesis: Amantadine	3
2	Antineoplastic agents: Synthesis: Chlorambucil, Cyclophosphamide, Thiotepa, Methotrexate, Fluorouracil, Tamoxifen.	5
	Drug Design and Development:	
	QSAR Lipophilic, electronic and steric parameters Hansch Linear Free Energy Relationship (LFER) model of QSAR Free Wilson Mathematical Model of QSAR	5
	De novo Drug Design Molecular modeling (MM) Computer Aided Drug Design (CADD)	3

	Methods of Lead Discovery Identification and Optimization of Lead	2
	Brief introduction to Combinatorial Chemistry and Parallel Synthesis	2

Practical – 22700P3

Sr. No.	Contents	No. of practical hours
1	Synthesis, Reaction monitoring and purification of following organic compounds: Anthranilic acid from phthalic anhydride Sulphanilamide from acetanilide 3-phenyl propionic acid from diethylmalonate Hippuric acid from glycine Dihydroxytryptene from anthracene and p-benzoquinone Fluorescein from resorcinol and phthalic anhydride. Purification of synthesized fluorescein by column chromatography Microwave assisted synthesis of any two compound	33
2	Characterization of synthesized compound with the help of UV and IR Spectroscopy	6
3	Demonstration of QSAR Models (Any two exercise) Literature survey of any QSAR Model and calculation of various physicochemical parameters Perform multiple regression analysis in MS Excel Generation of Best equation.	6

References Books:

1. J. N. Delagado and W. A. R. Remers, 11th edn, Wilson and Giswolds Textbook of organic medicinal and pharmaceutical chemistry, J. Lippincott Co. Philadelphia
2. W. C. Foye, Principles of medicinal chemistry, Lea and Febiger, Philadelphia.
3. H. E. Wolff, edn, Burgers Medicinal chemistry, John Wiley and sons, New York Oxford University Press, Oxford
4. Daniel Lednicer, Strategies for organic drug synthesis and design, John Wiley and Sons USA
5. G. L. Patrick. An Introduction to Medicinal Chemistry, 4th Edition, Oxford University Press.
6. Vogel's Text books practical organic chemistry, ELBS/Longman, London.
7. Arthur Vogel, Elementary Practical Organic Chemistry, Part-I and II, Second edition, CBS Publisher.