

GUJARAT TECHNOLOGICAL UNIVERSITY

BACHELOR OF PHARMACY

Semester: VII

Subject Name: **Pharmaceutical Chemistry-IX (Medicinal Chemistry)**

Subject Code: **270003**

[Theory]

Sr. No.	Course Content	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:	
a.	Synthetic Antibacterial Agents / Antimicrobial Agents: <ul style="list-style-type: none"> SAR: Sulfonamides, Quinolones Synthesis: Sulfacetamide, Sulfadoxin, Sulfamethoxazole, Sulfasalazine, Trimethoprim, Norfloxacin, Ofloxacin, Ciprofloxacin. 	04
b.	β-Lactam Antibiotics: <ul style="list-style-type: none"> SAR: Cephalosporins, Penicillins Synthesis of Penicillin-G 	06
c.	Tetracyclines, Aminoglycosides, Macrolides and Miscellaneous Antibiotics: <ul style="list-style-type: none"> SAR: Aminoglycosides, Tetracyclines, Macrolides. Synthesis of Chloramphenicol 	04
d.	Antimycobacterial Agents: <ul style="list-style-type: none"> Synthesis: Ethambutol, Isoniazid, Pyrazinamide, Clofazimine, PAS. 	02
e.	Antifungal Agents: <ul style="list-style-type: none"> Synthesis: Clotrimazole, Ketoconazole, Fluconazole 	02
f.	Antiprotozoal Agents: Antimalarial and Antiamoebic Agents <ul style="list-style-type: none"> SAR: Quinolines Synthesis: Metronidazole, Ornidazole, Chloroquine, Amodiaquine, Primaquine, Pyrimethamine. 	03
g.	Anthelmintics: <ul style="list-style-type: none"> Synthesis: Albendazole, Mebendazole. 	01
h.	Antiviral and Anti-HIV Agents: <ul style="list-style-type: none"> Synthesis: Amantadine 	04
i.	Antineoplastic agents: <ul style="list-style-type: none"> Synthesis: Chlorambucil, Cyclophosphamide, Thiotepa, Methotrexate, Fluorouracil, Tamoxifen. 	06

2.	Hormones and Related drugs:		
	a.	Antidiabetic agents: <ul style="list-style-type: none"> Synthesis: Glipizide, Metformin, Pioglitazone, Tolbutamide, Glimipride. 	03
	b.	Thyroid Hormones and Antithyroid Drugs <ul style="list-style-type: none"> Synthesis: Thyroxine, Methimazole, Carbimazole. 	02
	c.	Steroids and Therapeutically related compounds <ul style="list-style-type: none"> (i) Nomenclature and stereochemistry of steroids (ii) Adrenocorticoids – Mineralocorticoids, Glucocorticoids (iii) Estrogens, Progestins and Androgens SAR: Estrogens and Adrenocorticoids, Progestins, Androgens 	06
3.	Immunomodulators		02

[PRACTICALS]

A.	Synthesis and purification of following organic compounds: <ol style="list-style-type: none"> p-Nitro aniline from Acetanilide Benzillic acid from Benzoin Benzamide from Benzaldehyde m-Nitrophenol from Nitrobenzene p-Aminophenol from Nitrobenzene Methylene blue from N,N-dimethyl aniline Chalcone from Benzaldehyde and Acetophenone Barbituric acid from Urea and Dimethyl malonate
B.	Reaction monitoring and characterization of synthesized compounds with the of TLC, UV and IR spectroscopy.

Text Books:

- J. N. Delagado and W. A. R. Remers, 11th ed, Wilson and Giswolds Textbook of organic medicinal and pharmaceutical chemistry, J. Lippincott Co. Philadelphia.
- W. C. Foye, Principles of medicinal Chemistry, Lea and Febiger, Philadelphia.

Reference Books:

- H. E. Wolff, edn, Burgers Medicinal chemistry, John Wiley and sons, New York Oxford University Press, Oxfords.
- Daniel Lednicer, Strategies for organic drug synthesis and design, John Wiley and Sons USA
- L. Finar. Organic chemistry Vol. I and Vol. II. ELBS/Longman, London
- Vogel's Text books practical organic chemistry, ELBS/Longman, London