Gujarat Technological University
Master of Pharmacy
Semester – II
Paper code -2920101
Specialization paper - III
Advanced Organic Chemistry - II

Theory
(Six hours per week, 7 credits)

1. Detailed study of individual reactions - allylic rearrangement, Amdt ester synthesis-Bayer-Villiger rearrangement, benzillic acid rearrangement – Curtius rearrangement-Dimorth rearrangement, Heck reaction, Lossen –Schmidt rearrangement, Pinner reaction, Reformatsky reaction, Sharpless oxidation, Suzuki reaction, Sonogashira reaction, Swern oxidation, Vilsmeir Haack reaction.
2. Stereochemistry and Chiral Techniques.
    a. Principles of stereochemistry including geometric isomerism, optical isomerism and conformational isomerism.
    b. Stereochemistry of compounds with asymmetric plane.
    c. Concept of chiral drugs, resolution of racemic mixtures, racemic switches, asymmetric synthesis of following drugs: Vit.C, Nifedipine, Atenolol, Ethambutol, Omeprazole, Ampicillin and Thalidomide.
    d. Role of stereochemistry in pharmacokinetics and pharmacodynamics
3. Synthon Approach:
   Definition, terms and abbreviation, rules and guidelines used in synthesis of following drugs.
   Pyrimethamine, Ibuprofen, Diclofenac, Rosiglitazone, Cetirizine, Ciprofloxacin, Captropil, and Losartan
4. Green Chemistry:: Solvent free reaction, water as a solvent, ionic liquids, supercritical liquids, supported reagents and catalyst.
5. Introduction to microwave reactions, ultrasound reactions, nanochemistry

Specialization paper - III
Advanced Organic Chemistry - II
Practical
(Six hours per week, 8 credits)

Laboratory examination including oral and practical examination in general course illustrative of theory section in the syllabus.

Reference Books:

1. March Jerry– Advance Organic Chemistry - Reaction Mechanism and Strucutre, McGraw-Hill International Book Company
2. F. A. Carey and R. J. Sundberg – Advance Organic Chemistry Part – A & B, Plenum Press.
3. Clayden Greeves and others – Organic Chemistry, Oxford University Press.
4. Jie Jack Li - Name Reactions, Springer
5. Eliel – Stereochemistry of Carbon Compounds
6. S. Warren - Designing Organic Synthesis, Wiley India Ltd.
7. P. T. Anastas and J. C. Warner – Green Chemistry theory and Practice, Oxford University Press.
8. C. Oliver Kappe and others – Practical Microwave Synthesis for Organic Chemist, Willey Interscience.
9. G. B. Sergeev – Nanochemistry, Elsevier publication\