SARDAR PATEL UNIVERSITY
Programme: MSC (Pharmaceutical Chemistry)
Semester: IV
Syllabus with effect from: June 2010

Paper Code: PS04EPCH01	**Total Credits: 4**
Title Of Paper: Advance techniques of Synthetic chemistry	

Unit	Description in detail	Weightage (%)
1	**Introduction to Green Chemistry:** Basic principles of green chemistry Green Reagents: Dimethylcarbonate, Polymer supported Reagents **Techniques of Green Chemistry** Introduction, Applications of Electrochemical, Photochemical, Microwave and Ultrasound induced green synthesis	**25 %**
2	**Green Catalysts:** Acid catalysts, Basic catalysts, Polymer supported catalyst, Biocatalysts (in brief), Phase transfer catalysis in green synthesis (Application of PTC in Organic synthesis, Crown ethers) **Versatile Ionic Liquids as Green Solvents (in brief)** **Applications of Green Chemistry in Day to Day life:** Dry cleaning of clothes, Versatile Bleaching agent	**25 %**
3	**Aqueous phase of Reactions:** Introduction, Diels – Alder reaction, Wittig – Horner Reaction, Michael Reaction, Aldol Condensation, Knoevenagel Reaction, Pinacol Coupling, Benzoin Condensation, Claisen – Schmidt Condensation, Heck Rection, Strecker's Synthesis, Wurtz Reaction **Synthesis Involving Basic principles of Green Chemistry : Some examples:** Introduction, synthesis of : Adipic acid, Catechol, Methyl Metharylate, Urethane, Furfural from Biomass, Ibuprofen, Paracetamol	**25 %**
4	**Combinatorial Chemistry:** Introduction, Combinatorial synthesis for drug optimization, Combinatorial chemistry for drug discovery, Combichem – solid phase techniques, Solid supports, the Anchor/Linker, Methods of parallel synthesis: Houghton's tea bag procedure, Automated parallel synthesis, Methods in mixed combinatorial synthesis: General principles, The mix and split method, Mix and split in the production of positional scanning libraries, Isolation of active component in a mixture – Deconvolution, Structure determination of Active compound. Limitation of Combinatorial synthesis. Examples of Combinatorial Chemistry	**25 %**

Basic Text & Reference Books:

- **New Trends in Green Chemistry,** 2nd edition, Author: V.K.Ahluwalia and M. Kidwai, Anamaya Publishers, New Delhi.
- **Green Chemistry, Theory and Practice**, Author: Pual T. Anastas and John C. Warner, Oxford University Press, 2000, New York, USA.
- **Green Chemical Synthesis and Processes**, Author: Paul T. Anastas, Luren G. Heine and Tracy C. Williamson (Editors), ACS Publication, 2000.
- **Handbook of Green Chemistry and Technology**, Editor**:** James Clark and Duncan Macquarrie, Blackwell Publishing.
- **Foye's Principles of Medicinal Chemistry,** 5th edition, Author: David A. Williams, Thomas L.

Lemke, Lippincott Williams & Wilkins publisher - a Walter kluwer business, ISBN – 13: 978-81-89836-02-3 ISBN – 10: 81-89836-02-1. ISBN: 0-7817-4211-0.

- **Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry,** 11th edition, Author: John H. Block, John M. Beale, Jr., Lippincott Williams & Wilkins publisher - a Walter kluwer business, ISBN – 0-7817-3481-9.