

## 9<sup>th</sup> semester

FCYC-----901	Organic chemistry-VII	3-0-0	3 credits
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### Module-I

[10 Lectures]

#### Green Chemistry

Principles, green solvents, concepts of atom economy, Domino and multi component reactions, green synthesis of pharmaceuticals and industrial chemicals.

**Coupling Reactions:** Carbon-carbon bond formation through coupling reactions (Heck, Suzuki, Stille and Sonogoshira), Carbon-hetero atom bond forming reactions using transition metals (Cu, Pd, Rh, Ru, Ni, Fe etc.)

### Module-II

[10 Lectures]

#### Synthetic Strategies:

Umpolung reactivity – formyl and acyl anion equivalents. Selectivity in organic synthesis – chemo-, regio- and stereoselectivity. Concepts of asymmetric synthesis – resolution (including enzymatic), desymmetrization and use of chiral auxiliaries. Carbon-carbon bond forming reactions through enolates (including boron enolates), enamines and silyl enol ethers. Michael addition reaction. Stereoselective addition to C=O groups (Cram and Felkin-Anh models).

### Model-III

[10 Lectures]

**Natural products:** Taxol, Rapamycin, prostaglandin, Endiandric acid (Total synthesis, structural elucidation, interaction with NMR).

#### Books:

1. Green Chemistry and Catalysis, Sheldon R.A., Arends I., Hanefeld Ulf, Wiley-VCH.
2. Green Chemistry: Theory and Practice, Anastas P.T, Warner J.C.
3. New Trends in Green Chemistry, Ahluwalia V. K., Kidwai M.
4. Advanced Organic Chemistry Part A & B: Carey, F. A., Sundberg, R. J, Fifth Edition, Springer International Edition.
5. Principles of Organic Synthesis, R. O. C. Norman and J.M.Coxon, Third Edition, Blackie Academic and Professional
6. Organic Synthesis: Clayden J., Greeves N, Warren S, and Wothers, Second Edition Oxford University.
7. Classics in Total Synthesis III: Further Targets, Strategies, Methods, K. C. Nicolaou, Jason S. Chen, Wiley-VCH, 1<sup>st</sup> Edn., 2011.
8. The Way Synthesis, T. Hudlicky and J. W. Reed, Wiley-VCH, 1<sup>st</sup> Edn., 2007.
9. Chemistry of Natural Products, N. R. Krishnamurty, University Press, 2<sup>nd</sup> Edn., 2010.