Course Type	Course Code	Name of Course	L	T	P	Credit
CHEM	CYI101	Chemistry Theory (Organic)	3	0	0	9

Course Objective

•The engineering undergraduate students should develop conceptual understanding of aromaticity, stereochemistry organic reactions and their application, which will be useful for most of the branches of engineering.

Learning Outcomes

Upon successful completion of this course, students will:

- Knowledge on the fundamental principles of aromaticity and properties of organic molecules
- Knowledge on chirality and their application organic molecules and understating of optical purity /resolution techniques
- Importance of pericyclic reactions and their application in organic synthesis
- The basic knowledge in polymer science/proteins will help in acquiring interdisciplinary knowledge in material and pharmaceutical sciences

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	**Aromaticity:** Introduction to aromaticity, Anti-aromatic and Non-aromatic compounds. Hückel rule for aromaticity and Frost diagram.	2	Understanding of fundamental principles of aromaticity and properties of organic molecules and their application in organic chemistry
2	**Stereochemistry**: Concept of chirality, enantiomers and diastereomers, specific rotation, optical purity, Racemic modification and resolution, R/S, D/L and E/Z nomenclature, Axial chirality.	4	This unit will help student in understanding the chirality and their application organic molecules and understating of optical purity /resolution techniques
3	**Pericyclic Reactions:** Definitions, Classifications, photochemical [2+2] and thermal [4+2] cycloaddition, Sigmatropic rearrangement.	4	This will help in understanding the cycloaddition reactions and their application in synthesis of organic molecules.
4	**Macromolecules:** Introduction to peptides and proteins. Basics of Polymer Chemistry, Polymerization techniques, natural and synthetic polymer.	4	The understanding of fundamental concepts in polymer science and proteins/peptides will help in acquiring interdisciplinary knowledge in material and pharmaceutical sciences

Text Books:

1. Organic Chemistry, J. CLayden, N. Greeves, S. Warren, P. Wother, Oxford University Press, 2000.
2. Principles of polymerization, George G. Odian, 4th Edn, John Wiley & Sons, Inc., Publication, 2004

Reference Books:

1. S. H. Pine, Organic Chemistry, McGraw Hill, 5th Ed, 1987.
2. R. T. Morrison and R. N. Boyd, Organic Chemistry, Prentice Hall.
3. W. Caruther, Reagents in Organic Chemistry, Cambridge University Press.
4. Lehninger Principles of Biochemistry, Nelson and Cox, 6th Edition, Macmillan, 2013