Course Type	Course Code	Name of Course        Strategies in Organic Synthesis		Т	Р	Credit
DE	NCYD526			0	0	3

## **Course Objective**

• With this course student will learn the techniques involves the synthetic strategies and total synthesis of various organic molecules

## Learning Outcomes

- By the end of this course, each student should be able to learn-
- The concept of disconnection and retrosynthetic approaches and basics of umpolung.
- New techniques of organic synthesis like one pot domino, cascade and tandem reactions.
- Various approaches of C-H activation and its application in affordable synthesis.
- The application of protection and deprotection of functional groups.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Disconnection approach: basic principles, one-group, two-group disconnections. Selectivity aspects: Chemoselectivity, regioselectivity, stereoselectivity, Retrosynthesis, Umpolung concepts; uses of aliphatic nitro, amines; radical reactions in synthesis- FGA, FGI and its reverse.	10L	The concept of disconnection and retrosynthetic approaches and its application in the total synthesis of molecules will be discussed in detail. Umplong concepts and its application will be presented Utilization of Radical reaction will be presented.
2	Synthetic strategies and total synthesis of complex organic molecules with biological interest.	10L	Synthesis of Biologically active natural product will be taught while focusing on the synthetic strategies and modern tools
3	Linear and convergent synthesis, Multi- component reactions, One-pot reactions, Domino, Cascade and tandem reactions, Modular Synthesis.	8L	Application of Linear, convergent and multicomponent reaction will be discussed in details
4	Directed ortho-metallation, Metathesis reactions, C-H activation and functionalization, Organometallic reagents, formation of C-X bond. Common catalysts and reagents (organic, inorganic and enzymatic).	8L	Various approaches of C-H activation and its application in affordable synthesis will be presented.
5	Protection and deprotection of active functional groups: alcohol, carbonyl and carboxyl groups, amine and amino acids.	6L	Importance of functional group protection and deprotection in organic synthesis will be presented in details.
TOTAL		42	

## **Text Books:**

1. The Logic of Chemical Synthesis, E.J. Corey and X-M. Cheng, Wiley, 1995. **Reference Books:** 

- Organic Synthesis: The Disconnection Approach, S. Warren, 2<sup>nd</sup> Edition, Wiley, 2008.
  Advanced Organic Chemistry, Part B, F.A. Carey and R.J. Sundberg, 5<sup>th</sup> Edition, Springer, 2008.