

Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NCYD522	Biocatalysis	3	0	0	3

Course Objective

- Biochemical studies for the metalloenzyme provide a useful starting point for the development of academically as well as industrially important synthetic analogues of bio-enzymes.

Learning Outcomes

- Students will be familiar with some of the important enzymatic action.
- Students will be able to model the active site of the bio-enzyme of their interest.
- Students will understand the advantage of synthetic model over active enzymes.
- They will be able to develop a non-toxic, green, economic and energy-efficient synthetic method for the preparation of synthetically/industrially important chemicals.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	Introduction: potential of enzyme-catalyzed processes in biology; Structure and probable enzymatic action of galactose oxidase, catechol oxidase, tyrosinase, vanadium haloperoxidase, etc. Introduction to model complexes: Impact in catalysis; Factors Governing Catalytic Activity	20L	Students will learn various structural and functional properties of enzymes.
2	Immobilization on solid supports: Novel concepts, synthesis and characterization, limitations of catalysts. Effect of local environment in catalysis, supported catalysts, Effect and application in fine Chemicals Industry, Selected examples from recent publications will be presented for most topics	22L	Students will learn various methods and materials for heterogenization. Also choices of various spectroscopic and analytic techniques for the thorough characterization of the supported materials. Gain limitation of catalysts, fundamentals of enzyme kinetic and various factors affecting the catalytic potential of the catalysts. Getting insite about some of the industrially and chemically challenging catalytic applications
TOTAL		42	

Text Books:

- Enzyme Kinetics and Mechanisms; Taylor, Kenneth B. ISBN 978-0-306-48025-6

Reference Books:

- Recent review articles/ articles
- Enzyme Kinetics and Mechanism; Paul F. Cook, W. W. Cleland. ISBN-13: 978-0815341406.