



Syllabus

Introduction and scope

Classification and nomenclature of enzymes,
Mechanisms of enzyme catalysis, chemical composition and structure,

Enzyme kinetics

Single substrate kinetics, Inhibitors and activators,
Two-substrate kinetics, modulation and regulation of enzyme activity,
Effect of T and pH, Enzyme deactivation

Production of enzymes,

Source of enzymes, Fermentation methods,
Large-scale industrial enzyme production, downstream processing
Industrial enzymes, practical consideration, oxidoreductases, hydrolases,

Immobilization of enzymes

Rational and applications, advantages
Methods of enzyme immobilization, matrixes for enzyme immobilization
Kinetics and properties of immobilized enzymes

Enzymatic reactors

Rate and stability characteristics of enzyme,
Batch/continuous, reactor type, reactor design and performance,

Applied enzymes in industry

Enzymes in food and feed, starch processing, baked foods, brewing, dairy products
Enzymes for chemicals and pharmaceuticals, sensors, detergents, treatment,
Hydrolytic enzymes, hydrolases, proteases, lipases, esterases,
Enzymes in fuel production and fiber-based industries,

References:

1. Kennedy JF "Biotechnology", vol 7a, A comprehensive treatise in 8 vol. VCH Verlag GmbH & Co, 1987.
2. Buchholz K. "Biocatalysis and Enzyme Technology" Wiley-Blackwell, 2005.
3. Aehel W, "Enzymes in Industry, production and applications" Wiley-VCH Verlag GmbH & Co, 2007.
4. Bommarius AS, "Biocatalysis, fundamentals and applications" Wiley-VCH Verlag GmbH & Co, 2004.
5. Baily JE, "Biochemical Engineering Fundamentals" 2nd edition, McGraw-Hill, 1986.
6. Moo young M, "Comprehensive Biotechnology" vol 1, Pergamon Press Ltd 1985.

Course evaluation

Homework	Course project	Midterm exam	Final exam
+	++	+	+