Level: Ph.D.

Course title: Kinetics and Mechanisms of Enzymatic Reactions

Course status: elective

ECTS: 15

Requirements: none

Learning objectives:
Acquiring new knowledge for studying and solving complex scientific problems in the field of enzymology and related disciplines.

Learning outcomes:
After successful completion of this course, students will be able to investigate the mechanism and kinetics of enzyme-catalysed reaction; carry out the techniques of enzyme assay methods; apply the principles of enzyme kinetics which involve generating, analyzing and interpretation of kinetic data, and understanding the regulatory roles of enzymes. All these will enable students to gain deeper insight into catalytic mechanism of enzymes and will also inspire them to further research in enzyme studies within the fundamental and applied research in the field of enzymology and in many other fields such as medicine, pharmacy, veterinary science, organic synthesis, agriculture, genetic engineering, biotechnology etc.

Syllabus

Theoretical instruction

Catalytic mechanisms of enzymes. Kinetics of enzymatic reactions. Inhibition of enzymes. Regulation of enzymes activity. Physical, chemical and kinetic methods for diagnostics of mechanisms of enzymatic reactions. Enzymatic reactions: enzyme-catalyzed group transfers, enzymatic oxidation and reduction, enzyme-catalyzed elimination, isomerization and rearrangements. Enzymatic reactions that make and break carbon-carbon bonds (lyases and ligases).

Practical instruction

Current enzymatic methods for evaluation of catalytic mechanisms of enzymes.

Weekly teaching load				Other:
Lectures: 5	Exercises:	Other forms of teaching:	Student research: 5	