

IDENTIFICATION

Course code : E2CP4A10
ECTS : 1.5

DURATION

Lectures : 12
Tutorial classes : 8
Labs : 0
Total : 20

Project :
Personnal work :

ASSESSMENT

2 Written exams (2h/2h)

TEACHING MATERIALS

LANGUAGE

English

CONTACT

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UE : AGROALIMENTAIRE

COURSE : Enzymology

SCOPE OF THE COURSE

OBJECTIVES

- To understand the mechanisms of enzymatic catalysis and the control of enzymatic kinetics.
- To be able to use enzymatic reactions to interpret cellular observations in relation to biochemical and physical compartmentalization.
- To be able to apply knowledge in enzymology to understand food degradation, certain biotechnology applications, and metabolic assays.

COMPETENCE AND SKILLS

- Master the vocabulary of enzymology (enzyme, substrate, product, enzymatic reaction, cofactor, coenzyme, activator, inhibitor, allostery).
- Know the classification of enzymes.
- Understand the principles of enzymatic catalysis : equilibrium, free energy and activation energy, active site and reaction mechanism, specificity of the enzymatic reaction.
- Be able to monitor an enzymatic reaction.
- Enzyme kinetics : single-substrate reaction, Michaelis–Menten equation, kinetic parameters and linearization methods.
- Influence of enzyme or substrate concentration.
- Enzyme activity, specific activity, purification rate and yield of an enzyme.
- Influence of pH and temperature on enzyme activity.
- Understand the inhibition of enzymatic reactions : competitive, non-competitive, uncompetitive.
- Cooperativity and allostery.

PROGRAM

1. Introduction to general enzymology.
2. Classification of enzymes.
3. Kinetics of single-substrate enzymatic reactions.
4. Influence of environmental conditions.
5. Inhibition.
6. Cooperativity and allostery.

BIBLIOGRAPHY

REQUIREMENTS

Molecules of living organisms and bioenergetics