BioProcess Digital

PROFESSIONAL COURSES IN BIOPROCESS ENGINEERING

Introduction to enzymatic bioconversions technology and engineering

Industrial bioconversions, enzyme kinetics, soluble and immobilized enzyme reactors technologies and operation, bioconversions cost

ONLINE COURSE

On-demand

COURSE FEE

350 € par session

COURSE ORGANIZATION

Course organized in 3 sessions

Sessions scheduling: suggested one per week

Effort: 3 - 6 h per session

COURSE OBJECTIVE

The course provides an introduction to enzymatic bioconversions processes. It describes the industrially used enzyme biocatalysts and bioconversion reactions, the kinetics of enzyme catalyzed reactions, the soluble and immobilized enzymes reactors technologies and optimal operations. It also reviews the cost analysis of bioconversion processes.

INSTRUCTORS

Isabelle CHEVALOT, Professeur ENSAIA

Jean-Marc ENGASSER, BioProcess Digital

DIGITAL LEARNING

- Learning platform with course resources
- Live or recorded slideshow presentations
- Case studies on spreadsheets templates with guides
- Online collective or one-to-one tutoring

COURSE PROGRAM

Session 1: Enzymatic bioconversions technologies and cost

- Industrial bioconversion enzymes and reactions
- Soluble enzymes bioreactors technologies and operation modes
- Immobilized enzymes bioreactors technologies
- Enzymatic bioconversion costs: equipment, enzyme and labor contributions

Session 2: Bioconversions kinetics and simulation

- Bioconversions kinetics with soluble and immobilized enzymes
- Bioreactors dynamics governing phenomena: reaction, mass transfer, fluid flow
- Bioreactors simulation models for reactors scale-up and optimization

Session 3: Enzymatic bioreactors optimal operation

- Batch or continuous bioreactors: influence on ezyme kinetics and cost
- Soluble or immobilized enzyme reactors: influence of enzyme stability and cost
- Optimal bioreactor temperature for minimal bioconversion cost