

Industrial Enzyme Engineering

Programme course

6 credits

Industriell proteinteknik

TFKE56

Valid from: 2017 Spring semester

Determined by

Board of Studies for Chemistry, Biology
and Biotechnology

Date determined

2017-01-25

Main field of study

Chemical Biology

Course level

Second cycle

Advancement level

A1X

Course offered for

- Chemical Biology

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

BSc in Chemical Biology and courses in Protein Chemistry and Protein Engineering

Intended learning outcomes

The course should give knowledge on industrial processes in which enzymes are used and give a deep insight on the demands that the process put on the enzyme properties and vice versa, i.e. the demands on the design of the process to allow efficient use of enzymes. The course should also give insight in which methods and techniques that can be used to affect or alter the enzymic properties for efficient use in industrial processes.

After completing the course, the student should be able to:

- Describe and explain how enzymes are used in a broad spectrum of industrial processes and describe how different enzymes can be modified for optimal performance in these processes.
- Describe and explain the fundamental chemical, technical and physical properties that govern an efficient use of enzymes in industrial processes.
- Plan and initiate an industrial process in which the use of an enzyme is a central part.
- Present the planning, analysis and evaluation of an industrial process using enzyme technology in the form of a technical report.

Course content

The lecture and project work gives in-depth insight in methodologies and approaches regarding the use of enzymes in industrial processes. Enzymes are presently used in many industrial sectors and several of these are discussed in the course. The course will in particular detail consider processes within the sectors of: food industry, small molecule synthesis, bioenergy production, environmental biotechnology, pulp and paper production, textile- and leather production.

Teaching and working methods

Teaching is organised in lectures, seminars, and project work. A large part of the course is pursued as individual projects and in project groups of 2-3 students. The course runs over the second half of the spring semester.

Examination

PRA2 Project assignment, oral and written presentation	3 credits U, G
TEN1 Written examination	3 credits U, 3, 4, 5

Grades

Four-grade scale, LiU, U, 3, 4, 5

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Magdalena Svensson

Examiner

Ann-Christin Brorsson

Education components

Preliminary scheduled hours: 70 h

Recommended self-study hours: 90 h

Course literature

Enzymes in Industry: Production and Applications, 3rd Edition, Wolfgang Aehle (Editor) ISBN: 978-3-527-31689-2, Utdelat material från institutionen (IFM).

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.