



# BB2030 Enzymatic Synthesis 7.5 credits

## Enzymatisk syntes

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

Course syllabus for BB2030 valid from Autumn 2011

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Biotechnology

## Specific prerequisites

At least 150 credits from grades 1, 2 and 3 of which at least 100 credits from years 1 and 2, and bachelor's work must be completed. The 150 credits should include a minimum of 20 credits within the fields of Mathematics, Numerical Analysis and Computer Sciences, 5 of these must be within the fields of Numerical Analysis and Computer Sciences, 20 credits of Chemistry, possibly including courses in Chemical Measuring Techniques and 20 credits of Biotechnology or Molecular Biology.

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

The course's goal is to provide basic knowledge about industrial biocatalysm in the limited area chemistry–biotechnology and thus give good theoretical and experimental insight into technical usage of enzymes for manufacturing of fine chemicals.

After passing the course, the student should:

- Be able to distinguish reaction mechanisms in enzymes from the different main classes and be able to decide which chemical reactions that enzymes from a certain class can exhibit.
- Be able to explain and exemplify different enzyme-catalyzed processes for stereoselective fine chemical production. For example, kinetic resolution, dynamic kinetic resolution, and stereoselective synthesis, and also be able to suggest strategies for optimization.
- Recognize advantages and disadvantages of different reaction media for enzymatic reactions and be able to decide suitable reaction conditions in individual cases.
- Be aware of the Swedish and foreign fine chemical industry which uses enzymatic processes and be able to exemplify products and those types of enzymes which are used.
- Be able to incorporate research literature and be familiar with the search tools for electronic databases which are available at KTH.

## Course contents

The course is aimed, firstly, at the students within the biotechnology program, master's program in biotechnology, chemistry and chemical technology program and to the PHD students. It consists of lectures and a project assignment which includes searching for literature, computer exercises, a seminar and labs. The course's lab portion is planned by the students themselves during exercises and is a part of the project assignment. The entire project assignment is presented in a seminar at the end of the course.

## Course literature

Announced at the start of the course.

## Examination

- INL1 - Literature Task, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laborator Work, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

## Other requirements for final grade

Written examination (TEN1; 4,5 credits, grading scale A-F), laboratory exercises (LAB1; 1,5 credits, grading scale Pass/Fail), literature task (INL1; 1,5 credits, grading scale A-F).

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.