# BB2460 Biocatalysis 7.5 credits

## Biokatalys

Course syllabus for BB2460 valid from Spring 16

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

**Grading scale:** A, B, C, D, E, FX, F
**Education cycle:** Second cycle
**Main field of study:** Biotechnology

## Intended learning outcomes

After passing the course, the student should:

- Be able to exploit and apply knowledge from basic biotechnology and chemistry courses to design environmentally sustainable enzymatic processes for industrial production of chemical products.
- Be able to distinguish reaction mechanisms of 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 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 industry which uses enzymatic processes and be able to exemplify products and types of enzymes used.
- Be able to incorporate research literature and be familiar with the search tools for electronic databases which are available at KTH.

## Course main content

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## Disposition

The course consists of lectures, exercises and a project assignment which includes searching for literature, labs and a seminar. The course's lab portion is designed, planned and documented by the students themselves and is a part of the project assignment. The entire project assignment is presented in a seminar at the end of the course.

## Language of instruction

Language of instruction is specified in the course offering information in the course and programme directory.

## Eligibility

**Admission requirements for programme students at KTH:**
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 Biochemistry, Biotechnology or Molecular Biology.

**Admission requirements for independent students:**
A total of 20 university credits (hp) in Biochemistry, Biotechnology or Molecular Biology. 20 credits of Chemistry, possibly including courses in Chemical Measuring Techniques and 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, Documented proficiency in English corresponding to English B.

## Literature

A complete list of scientific papers is presented at the start of the course.

## Examination

- LAB1 - Laboratory work, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises and seminarium, 1.5 credits, grading scale: A, B, C, D, E, FX, F

## Requirements for final grade

The requirement for a final grade is grade E or above on TEN1 and ÖVN1 and grade P on LAB1.

The final grade will be calculated from 75% based on the written examination and 25% based on the grade on the project assignment. If the written examination gave an F then the final grade is F independently of the grade of the project assignment. The grade on the project assignment can increase the final grade one step, not more.

The grade on the project assignment will not give a final grade lower than the grade on the written examination.