BB2460 Biocatalysis 7.5 credits

Biokatalys

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

Establishment

Course syllabus for BB2460 valid from Spring 2014

Grading scale

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

Education cycle

Second cycle

Main field of study

Biotechnology

Specific prerequisites

**Admission requirements for programme students at KTH:
**Eligibility for studies at the advanced level; i.e. admission to the 7th semester on the 5 year engineering programme CBIOT. For this 150hp from the 1st three years should be finished, of which 110 hp from the 1st two years, as well as either BB101X or BB102X should be finished.

alternatively admission to one of the masters programmes TMMMM, TMVTM, TMBIM eller TIMBM.

Language of instruction

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

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 contents

The course is compulsory for students at the advanced level within Industrial and Environmental Biotechnology, but is also aimed for exchange students and others with prerequired knowledge.

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.

Course literature

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

Examination

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

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

Other 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.

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.