



# FCB3203 Biocatalysis for Doctoral Students 4.0 credits

## Biokatalys för forskarstuderande

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 FCB3203 valid from Spring 2022

## Grading scale

P, F

## Education cycle

Third cycle

## Specific prerequisites

Eligible for studies at the third-cycle level.

## Language of instruction

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

## Intended learning outcomes

After completion of the course the student shall be able to

- demonstrate in-depth knowledge and analytical skills in the field of biocatalysis
- demonstrate good ability to explain and analyze complex concepts in biocatalysis based on relevant research literature, and in a pedagogical way communicate the knowledge in writing
- formulate and discuss in writing how biocatalysis can be applied in industry to create more environmentally sustainable biotechnological and chemical processes and, to reflect on sustainable societal development

## Course contents

The course provides an overview of the research area Biocatalysis, with special emphasis on the application of enzymes for environmentally sustainable production of chemical products.

Relevant enzymes and their reaction mechanisms are discussed. Furthermore, central experimental techniques for the use of enzymes in organic solvents are discussed, as well as methods for optimizing stereochemical yields with industrial processes as examples.

Furthermore, the course provides knowledge about general and current techniques for design and modification of enzymes, for example directed evolution, for application in biocatalysis. The student carries out a project where a theoretical experiment is designed which includes, among other things, to select and justify choice of methods for experiment execution and analysis of results.

## Examination

- INL1 - Hand in assignment, 1.0 credits, grading scale: P, F
- PRO1 - Project, 3.0 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.

## Other requirements for final grade

For the final grade, an approved written project report is required. Furthermore, 80% active participation in scheduled lectures and a passing grade on associated in-depth assignments that take the form of a reflective and critically examining analysis of selected research work in the field of biocatalysis are required.

## 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.