



BB2020 Molecular Enzymology

7.5 credits

Molekylär enzymologi

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

Establishment

Course syllabus for BB2020 valid from Autumn 2016

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:

**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.

**Admission requirements for independent students:

**A total of 20 university credits (hp) in biochemistry, microbiology and gene technolo-

gy/molecular biology. 30 university credits (hp) chemistry, as well as 20 university credits (hp) in mathematics and computer science as well as bioinformatics 3,5 university credits (hp) and statistics 3,5 university credits (hp) or corresponding. Documented proficiency in English corresponding to English B.

Language of instruction

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

Intended learning outcomes

The course will give a fundamental understanding of enzyme function and will teach the methods that form the basis for enzyme characterisation.

Course contents

- Catalytic principles and reaction mechanisms of enzymes.
- Enzyme kinetics (steady-state and pre steady-state) and inhibition (reversible and irreversible). Transition-state inhibitor.
- Binding energy and catalysis. Practical methods in enzymology, for example for studies of enzyme kinetics and reaction mechanisms, detection of intermediates, active-site titration.
- Environmental effects on enzymes, for example pH, temperature, organic solvents.
- Protein engineering, aims and strategies.

The course has many practical steps as in depth planning of experiments, information search emphasized on structures. Each student has to present a study on one enzyme in a written and oral report. The course ends with a written take-home examination.

Course literature

Enzymes: A Practical Introduction to Structure, Mechanism, and data Analysis. Second edition. Robert A. Copeland. Wiley-VCH, ISBN 0-471-35929-7

Examination

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

Written take home examination (TEN1; 4,5 credits, grading scale A-F), Laboratory course (LAB1; 1,5 credits, grading scale Pass/Fail), Literature exercise (INL1; 1,5 credits, grading scale Pass/Fail).

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.