



# BB1050 Biotechnology 6.0 credits

## Bioteknik

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 BB1050 valid from Autumn 2011

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

Completed upper secondary education including documented proficiency in English corresponding to English A. For students who received or will receive their final school grades after 31 December 2009, there is an additional entry requirement for mathematics as follows: documented proficiency in mathematics corresponding to Mathematics A. Specific requirements in mathematics, physics and chemistry are corresponding to Mathematics E, Physics B and Chemistry A.

## Language of instruction

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

## Intended learning outcomes

The course aims to provide an introduction to the theoretical knowledge in biochemistry and cell biology and an introduction to biotechnology. Much of the course focuses on the cells macro-molecular and super-molecular systems.

After passing the course, the student should be able to:

- describe the different types of cell structures and organisations
- Explain the difference between the different cell types
- describe the different macro-molecules (DNA, RNA, proteins) structure, function, and biosynthesis
- explain the difference between the different macro-molecules
- explain the principles for enzyme-catalyzed reactions
- describe the technical applications for enzymes.
- describe the biological membranes structure and function
- describe the different energy transformation principles (photosynthesis, oxidative phosphorylation).
- explain the difference between those different processes.
- describe those most important (glycolysis, glycogenolysis, the citric acid cycle, the pentophosphate pathway) metabolic processes' structure, function, interaction and regulation.
- describe and account for those genetic tools and their applications.
- describe and account for the principles and methods for the cleaning and characterizing of proteins

## Course contents

Prokaryota and Eukaryota cells' structure and organization. The living organisms' chemical composition. Membranes' structure and function. Energy transformation in biochemical reactions, oxidative phosphorylation, and photosynthesis. Proteins structure, function and biosynthesis. Enzyme's catalytic function and roll in metabolism. Techniques for cleaning and characterizing proteins. Technical applications of enzymes. Nucleic acids' structure, biosynthesis and function in the cell's transference of information. Genetic tools and applications. An introduction to Swedish biotechnology and its roll in industrial applications.

## Course literature

To be announced.

## Examination

- TEN1 - Examination, 6.0 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

Examination (TEN1; 6,0 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.