



# BB1150 Biochemistry 1 7.5 credits

## Biokemi 1

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 BB1150 valid from Autumn 2022

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

## 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 have

Knowledge and understanding to:

- Describe and explain basic biochemical concepts. (TEN1)
- Describe the function, name and chemical structure of different biomolecules. (TEN1)
- Apply common techniques used in biochemical laboratory exercises, with regards to environmental, human and societal aspects. (LAB1)

Skills and abilities to:

- Summarize the executed laboratory exercises in a report. (LAB1)

For higher grades (A-D) the student shall also have

Knowledge and understanding to:

- Use and combine knowledge within biochemistry to explain complex biochemical questions. (TEN1)

## Course contents

All living organisms require energy, but the opportunities to acquire energy varies. The process is called metabolism and gives both building blocks and energy. The metabolism includes both degrading (catabolic) and building (anabolic) processes. This course will primarily include catabolism of carbohydrates for energy extraction and the relevant biomolecules involved in these processes.

Course main contents:

- Chemical structures, functional groups, isomerism and various types of chemical bonds.
- The unique solvent properties of water.
- Biological building blocks, amino acids, nucleotides, carbohydrates and lipids.
- Visualization of simple biochemical structures by hand.
- The composition, structure and function of proteins.
- The activity, catalytical strategy and role in metabolism of different enzymes.
- Structure, isomerism and construction from mono- to polysaccharides of carbohydrates.
- Different types of lipids.
- Composition of biological membranes with proteins, channels and pumps.
- Carbohydrate degrading metabolism from glycolysis to oxidative phosphorylation.
- Energy changes and electron transfer in metabolic pathways.
- The role and contribution of enzymes to the development of a sustainable society.
- The role of biochemistry in a sustainable society.
- Execution of a laboration with regards to environmental, human and societal aspects and writing of a report.

- Risk assessment in the laboration of the chemicals' impact on the environment and evaluation of how they should be handled in the laboratory.

## Examination

- LABA - Laboratory, 1.0 credits, grading scale: P, F
- TENA - Written Exam, 6.5 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

To pass the course the student must pass the examination (TENA) and pass the laboratory course (LABA).

## 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.