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 2016

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

The upper-secondary school before 1 July 2011 and adult education at upper-secondary level before 1 July 2012

Specific entry requirements: mathematics E, physics B and chemistry A. The grade Passed or 3 inn each of the subjects is required .

The upper-secondary school from 1 July 2011 and adult education at upper-secondary level from 1 July 2012 (Gy2011)

Specific entry requirements: Physics 2, Chemistry 1 and Mathematics 4. Minimum requirement is a pass grade.

Language of instruction

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

Intended learning outcomes

The learning outcomes (1-10) of this course are listed below and both learning activities and examination are based on those.

After you have passed this course, you will have gained knowledge and understanding within the topic and you will be able to explain (interpret, understand, reflect and remember) the following:

- Fundamental biochemical concepts (1)
- Biomolecules; construction, function, structure, energy and reactivity (2)
- Enzymes as biological catalysts (3)
- Carbohydrate degrading metabolism – from glucose to carbon dioxide, water and energy (4)
- The role and contribution of enzymes in the development of a sustainable society (5)

After you have passed this course, you will have gained the following applied skills and capabilities:

- Use chemical names and structures for selected biomolecules (6)
- Draw selected biochemical structures by hand (7)
- Perform fundamental laboratory approaches with respect to the environment, humans and the society (8)
- Write a lab report (9)

After you have passed this course, you will have gained an ability to make a judgment and adopt a standpoint to:

- Evaluate the environmental-impacts of the chemicals used in the laboratorial part of the course as well as how to handle the chemicals in the laboratory (10)

Course contents

The course main content is listed below and serves as elementary knowledge for BB1230 Biochemistry 2 and other courses given by KTH School of Biotechnology.

- Chemical structures, functional groups, isomers and different types of chemical bonds

- Water as a solvent
- Biological building blocks - amino acids, nucleotides, carbohydrates and lipids
- Proteins - construction, structure and function
- Enzymes - activities, catalytic strategies and the role in the metabolism
- Carbohydrates - structure, isomers and construction from mono- to polysaccharides
- Different lipids
- Biological membrane structure - proteins, channels and pumps
- Carbohydrate degrading metabolism - from glycolysis to oxidative phosphorylation
- Energy changes and electron transfer in metabolism
- Discuss the role of biochemistry in a sustainable society
- Evaluate and perform fundamental biochemistry experiments with respect to environment, humans and the society.

Course literature

Biochemistry, 8:e upplagan (2015), Jeremy M. Berg, John L. Tymoczk, Gregory J. Gatto, Jr. och Lubert Stryer. ISBN: 9781464126109

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.