



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Biokemi

Biochemistry

KBKF15, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED B/K

Date of Decision: 2023-04-18

General Information

Main field: Technology.

Compulsory for: B3

Language of instruction: The course will be given in English

Aim

The aim of the course is to give basic knowledge in biochemistry, particularly within protein chemistry, enzymology, photosynthesis, and metabolism as well as basic abilities in biochemical laboratory work.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to explain and describe central methods for purification and characterization of proteins
- be able to explain and describe enzyme function and regulation
- be able to discuss and describe the energy metabolism and biosynthesis in cells
- be able to explain, describe and generalise central concepts of metabolic regulation

Competences and skills

For a passing grade the student must

- be able to in a group carry out and describe in a written report a protein purification process, done in laboratory scale
- have the ability to master some common biochemical laboratory techniques

Judgement and approach

For a passing grade the student must

- be able to estimate the feasibility of a method for purifying a protein from a biological material
- be able to evaluate in a scientific way and justify results received from laboratory work

Contents

- different methods for protein purification and protein characterization
- examples of specific enzyme mechanisms
- carbohydrates in biological systems
- basic concepts for understanding metabolism
- the three steps of energy metabolism
- metabolism of carbohydrates, fats and proteins
- control of metabolism by different methods
- mechanisms of hormone action
- electron transport and its relation to ATP synthesis and photosynthesis
- biosynthesis of central biomolecules
- purification of an enzyme in a laboratory practical

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Written examination, active participation in the laboratory exercise and an approved report from the laboratory exercise.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts

Code: 0121. **Name:** Biochemistry, Theory.

Credits: 6. **Grading scale:** TH. **Assessment:** Written examination. **Contents:** Different methods for protein purification and protein characterization. Examples of specific enzyme mechanisms. Carbohydrates in biological systems. The three steps of energy metabolism. Control of metabolism by different methods. Mechanisms of hormone action. Electron transport and its relation to ATP synthesis and photosynthesis. Biosynthesis of central biomolecules.

Code: 0221. **Name:** Biochemistry, Practicals.

Credits: 1,5. **Grading scale:** UG. **Assessment:** Report on practicals. **Contents:** The laboratory practical covers the purification of genetically modified lactate dehydrogenase from E.coli.

Admission

Assumed prior knowledge: KBKF05 Cell Biology

The number of participants is limited to: No

The course overlaps following course/s: KBKA10, KBK010, KBK020, KBK011

Reading list

- Berg, J.M., Tymoczko, J.L., Gatto, G.J. and Stryer, L.: Biochemistry, Ninth edition. W.H. Freeman & Co, 2019, ISBN: 13: 978-1-319-11465-7.

Contact and other information

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Course homepage: <http://www.tbiokem.lth.se/english>