



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Bioanalys Bio Analytical Chemistry

KBTN01, 7,5 credits, A (Second 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: Biotechnology.

Elective for: B4-mb, B4-pt, MBIO1, MLIV1, N4-nbm, MLAK1

Language of instruction: The course will be given in English

Aim

The objective of the course in bioanalysis is to give an overview of the bioanalytical area and basic knowledge of the physico-chemical principles behind different bioanalytical methods. By applying and integrating knowledge previously gained by the student, the course will provide a deeper understanding of basic principles and factors that affect the choice of individual methods and steps.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- understand the different bioanalytical principles that are part of the course. He or she should be able to describe these analytical principles and their strengths and weaknesses.
- in addition, the student should understand the importance of retrieving samples in a correct way and to handle it in an adequate and reproducible manner.

Competences and skills

For a passing grade the student must

- faced with an analytical problem, be able to in a rational way, choose an adequate bioanalytical method
- have a firm understanding of the strengths and weaknesses related to the bioanalytical

methods taught in the course

- through the laboratory exercises, have gained certain experimental experience, mainly concerning the handling of bioanalytical reagents

Judgement and approach

For a passing grade the student must

- perform an assignment where she/he in a rational way and based on the theoretical part of the course should chose a method for solving a given analytical problem. The student will receive information about a actual analytical problem and present a suggestion of a solution using suitable analytical method/s.
- in a clear way present his/her experiences and conclusions in a written report and through an oral presentation.
- discuss and critically evaluate the methods/conclusion presented by other students.

Contents

This course covers the use of enzymes, antibodies, cells and DNA in analytical systems, e.g. biosensors. The course also covers important methods for analysis of biomolecules such as mass spectrometry as well as emerging technologies like lab-on-chip and microfluidic analytical systems. Analysis in well equipped laboratories as well as for field-adapted analysis is included. Applications in medical as well as food industry together with environmental monitoring is covered. Sampling and sample handling is considered.

Examination details

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

Assessment: Written examination. Apart from laboratory exercises and assignment, at least 50 % of the given problems in the written exam must be solved correctly. Questions based mostly on general understanding not so much on details. Laborations will be judged on the basis of the laboration report and the Assignment will be judged based on written and oral presentation.

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: 0112. **Name:** Assignment.

Credits: 1. **Grading scale:** UG. **Assessment:** Written and oral presentation.

Code: 0212. **Name:** Bioanalysis.

Credits: 5. **Grading scale:** TH. **Assessment:** Examination.

Code: 0312. **Name:** Laboratory Work.

Credits: 1,5. **Grading scale:** UG. **Assessment:** Written report.

Admission

Assumed prior knowledge: KBKA10/KBK011 Biochemistry

The number of participants is limited to: 36

Selection: Completed university credits within the program. (Note that only credits which according to Ladok have been included in the program before the selection process count.) Priority is given to students enrolled on programmes that include the course in their curriculum.

The course overlaps following course/s: KBT050

Reading list

- File containing exclusively written material for the course and reprints.

Contact and other information

Course coordinator: Martin Hedström, Martin.Hedstrom@biotek.lu.se

Course homepage: <http://www.biotek.lu.se/kbt050>