CB2080 Proteomics 7.5 credits

Proteomik

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for CB2080 valid from Spring 2023

Grading scale

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

Education cycle

Second cycle

Main field of study

Biotechnology

Specific prerequisites

**Admission requirements for programme students at KTH:
**At least 150 credits from grades 1, 2 and 3 of which at least 100 credits from years 1 and 2, and bachelor's work must be completed. The 150 credits should include a minimum of 20 credits within the fields of Mathematics, Numerical Analysis and Computer Sciences, 5 of these must be within the fields of Numerical Analysis and Computer Sciences, 20 credits of Chemistry, possibly including courses in Chemical Measuring Techniques and 20 credits of Biotechnology or Molecular Biology.

**Admission requirements for independent students:
**A total of 20 university credits (hp) in biochemistry, microbiology and gene technology/molecular biology. 30 university credits (hp) chemistry, as well as 20 university credits (hp) in mathematics and computer science as well as bioinformatics 3,5 university credits

(hp) and statistics 3,5 university credits (hp) or corresponding. Documented proficiency in English corresponding to English B.

Language of instruction

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

Intended learning outcomes

The aim of the course is to provide the students with an introduction to current methods, challenges, and applications in the field of proteomics.

After completion of the course, the student should be able to describe and discuss the possibilities, advantages, complexity, and drawbacks of various proteomics technologies. The student is also expected to be able to compare traditional methods with emerging technologies, suggest suitable approaches for specified applications, motivate their choice, speculate and argue about the future of proteomics technologies, participate in scientific discussions regarding proteomics technologies and critically evaluate scientific results.

Course contents

The objective of the course is to present current trends for large-scale protein analysis. The course will provide an overview of typical proteomics applications used today, including principles, needs and challenges. The content covers both experimental methods as well as data analysis strategies with a focus on biomarker discovery and precision medicine.

Examination

- ÖVN1 - Exercise, 1.0 credits, grading scale: P, F
- ÖVN2 - Exercise, 1.0 credits, grading scale: P, F
- TEN1 - Written exam, 5.5 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.

If the course is discontinued, students may request to be examined during the following two academic years.

The examination consists of this course three parts: one practical and one oral exercise and a final oral exam.

The practical exercise is based on lab work conducted in groups. Each group will have one lab assistant to supervise the group. The goal is to generate and analyze data within a specified

project. A written lab report summarizing the project will be handed in per group. Attendance and active participation are mandatory for all lab sessions. This is a group activity. Hence, all students will be evaluated as group members.

The oral exercise includes presenting your lab work to your peers. Each group prepares slides summarizing your results and observations in the context of the course content. Each group will also act as an opponent to another group, and all group members are expected to present and ask questions. Attendance and active participation are mandatory for the final workshop. This is a group activity. Hence all students will be evaluated as group members.

The oral exam is performed in groups of three students and consists of questions that aim to discuss the different topics within and around proteomics. Students are expected to show that they have obtained the knowledge according to the aims of the course. The students should also be able to express their opinions regarding various aspects of proteomics technologies. Opinions cannot be right or wrong, but the way the argumentation is presented will be evaluated. Each student will be evaluated individually and regardless of the other group members.

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.