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 2019

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 methodologies and trends in the field of proteomics. The students should also obtain an overview and awareness of typical proteomics applications.

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

Course contents

The objective of the course is to present current trends for global protein analysis and to demonstrate its principles, challenges and complexity. The course will therefore provide an overview of typical proteomics applications used today, such as for biomarker discovery and validation.

The course is focused on different methods, technologies and strategies currently used within the field of proteomics in general and with an emphasis on biomarker discovery.

Disposition

The lectures will cover background and recent advances for both classical proteomics methods, such as 2D-gel electrophoresis and mass spectrometry, and strategies based on high-throughput antibody generation, bioinformatics and structural approaches.

Course literature

- Principles of Proteomics by R.M Twyman, Garland Science, ISBN: 9780815344728 (second edition)
- Handout and articles distributed at the lectures

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 two parts, one oral and one written;

The oral exam will be a group activity based on understanding and presenting a summary of aspects within proteomics. Each group will prepare and present slides to the class based to summarize a given topic. Each group will describe the content and discuss the information, drawbacks and limitations in relation to proteomics. The group work will provide an overview and serve as an important learning activity in preparation for the written exam.

The written exam consists of questions that aim to discussion 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 will also be able to express own opinions regarding various aspects of proteomics technologies. Opinions cannot be right or wrong but the way the argumentation is presented will be evaluated.

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.