



## CORE FACILITIES

### SC00003 Proteomics, 3 credits

Proteomik, 3 högskolepoäng

*Third-cycle level / Forskarnivå*

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### Confirmation

This syllabus was confirmed by the Council for PhD Education at Sahlgrenska Academy on 2019-01-31, and is valid from Spring semester 2019.

#### *Responsible Department*

Core Facilities, Sahlgrenska Academy

### Entry requirements

To qualify for admission to the course, the student has to be registered as a PhD student. Biochemistry on ground level.

### Learning outcomes

After completing the course the PhD student is expected to be able to:

#### **Knowledge and understanding**

- become familiar with and to give examples of separation methods that can be used in sample preparation and experimental analysis
- define the name and function of the different parts of an MS instrument
- understand and be able to explain the acquisition of peptide mass and the production of fragment ions and how they can be used to identify a protein
- describe and discuss the design of proteomic study in terms of a simple or a more complex sample
- explain the difficulties and suggest methods for quantification of protein expression.

#### **Skills and ability**

- the use of data base matching for protein identification
- perform and report the procedure from protein extraction in a cell lysate to the analysis of the difference in protein expression

#### **Judgement and approach**

- compare results from different acquisition methods of mass spectrometry

- judge and criticise the sensitivity in quantitative proteomic analysis.

## Course content

The aim of the course is the basic topics of proteomics, applications and the methods used in proteomics. The course will cover separation of proteins and peptides, sample preparation techniques, basic theory of biological mass spectrometry (MS) and liquid-chromatography-MS instruments, data analysis and bioinformatics of MS data.

## Types of instruction

The course consists of lectures, instrument demos, practical laboratory exercises, literature survey seminars, film and group work.

### *Language of instruction*

The course is given in English.

## Grades

The grade Pass (G) or Fail (U) is given in this course.

## Types of assessment

At least 75% attendance at practical and experimental exercises, written exam with 70% correct answers, individual oral presentation of a proteomic paper during literature survey seminar as well as an oral and written presentation of results from the practical laboratory exercises. Absence or failure from these tasks can be compensated by a written report. The written examination/ assessment will be web-based and using multiple choice as well as free text questions.

A doctoral student has the right to request a change of examiner if failed twice on the same exam, if this is practically possible. Such a request should be put forward in writing and addressed to the department.

## Course evaluation

There will be a written web-based course evaluation at GUL after the course. The teacher, responsible for the course, will make a summary of the evaluation. This will point out directions for the next course and will also be reported to the students as well as published on GUL.

## Other information

This syllabus was confirmed by the Council for PhD education at Sahlgrenska Academy on 16-09-2014 and was last revised on 28-08-2018 (reg.nr.: U 2018/457). The revised course syllabus is

valid from the spring term 2019. It was entered into FUBAS on 31-01-2019.