UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

COURSE SYLLABUS

Biomarkers - Data Analysis A1F

7.5 credits

Course code: SY758A
Version number: 12
Valid from: 1 January 2026
Ratified by: Curriculum Committee for Bioscience
Date of ratification: 22 May 2025

1. General information about the course

The course is provided by the University of Skövde and is named Biomarkers - Data Analysis A1F (Biomarkörer - analys av data A1F). It comprises 7.5 credits and is a second-cycle course. The level of progression is A1F.

The course is a part of the main field of study in Systems Biology. The disciplinary domain of the course is Natural Sciences.

2. Entry requirements

The course has the following entry requirements: passed SY768A Data Analysis for Life Science A1N and passed BV705A Biomarkers in Molecular Medicine A1N and attended SY760A Multivariate Biological Analysis with R A1F (or the equivalent).

An additional requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as the Swedish course English 6 or English level 2. This is normally demonstrated by means of an internationally recognized test, e.g. IELTS or TOEFL or the equivalent.

3. Course content

The course integrates knowledge from previous courses in biomarkers and analysis of multivariate data. The course focuses on using methods like logistic regression, decision trees, ROC-curves, cross-validation and Kaplan-Meier analysis to combine, analyze and validate biomarkers. The statistical software R will be used on the majority of the computer labs, but other software tools might also be used. Genomic and proteomic data from different scientific articles will be used throughout the course. The course ends with a discussion and presentation of scientific articles in the relevant area.

4. Objectives

After completed course the student should be able to:

- analyze multivariate data to identify, combine and validate biomarkers,
- evaluate different scientific methods that are used to identify and analyze biomarkers, and
- critically review scientific articles in the area of analysis of biomarkers, and present the results of these articles orally, and discuss ethical aspects of the studies.

5. Examination

The course is graded A (Excellent), B (Very good), C (Good), D (Satisfactory), E (Sufficient) or F (Fail).

A final grade of the course is only issued when all the examination parts have been passed.

The examinations of the course consist of the following modes of assessment:

- **Written assignments**
  2.5 credits, grades: G/U
- **Oral presentation**
  1 credit, grades: G/U
- **Written examination in computer lab**
  4 credits, grades: A/B/C/D/E/F (determines the final grade)

Students with a permanent disability who have been approved for directed educational support may be offered adapted modes of assessment.

6. Types of instruction and language of instruction

Teaching consists of lectures and computer exercises.

The teaching is conducted in English.

7. Course literature and other educational materials

Scientific articles.

8. Student influence

Student influence in the course is ensured by means of course evaluation. The students are informed about the results of the evaluation and potential measures that have been taken or are planned, based on the course evaluation.

9. Additional information

Further information about the course, as well as national and local governing documents for higher education, is available on the website of the University of Skövde.