UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

COURSE SYLLABUS

Infection Biology - Modeling A1F

7.5 credits

Course code: SY764A
Version number: 10
Valid from: 1 January 2027
Ratified by: Curriculum Committee for Bioscience
Date of ratification: 29 January 2026

1. General information about the course

The course is provided by the University of Skövde and is named Infection Biology - Modeling A1F (Infektionsbiologi - modellering 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. It can also be a part of the main field of study in Bioinformatics. 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 BV714A Molecular and Cellular Infection Biology A1N and attended SY765A Systems Biology A1F 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 aim of the course is to provide an in-depth theoretical knowledge with practical applications within infection biology. The course deals with different methods for analysing and modelling, such as logistic regression, two-way ANOVA, SIR models, survival analysis and machine learning models. During the course, the theoretical parts will be illustrated with practical computer exercises. The course also includes critically reviewing scientific articles in infection biology with focus on the applied theoretical method.

4. Objectives

After completed course the student should be able to:

- apply machine learning and statistical models to analyze large-scale omics data and investigate associations between infections and risk factors,
- apply mathematical and statistical models to analyse and study disease transmission in a population, and
- critically review and analyse different theoretical methods used in scientific articles in infection biology, and present the results of these orally.

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 assignment**
  1.5 credits, grades: G/U
- **Oral presentation**
  1.5 credits, grades: G/U
- **Written examination in computer lab**
  4.5 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

The teaching is comprised of supervision and lectures.

The teaching is conducted in English.

7. Course literature and other educational materials

Scientific articles and provided material.

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.