UNIVERSITY OF SKÖVDE

TRANSLATION FROM SWEDISH

COURSE SYLLABUS

Current Research Topics in AI for Bioinformatics A1F

7.5 credits

Course code: BI766A
Version number: 2
Valid from: 1 January 2026
Ratified by: Curriculum Committee for Bioscience
Date of ratification: 24 April 2025

1. General information about the course

The course is provided by the University of Skövde and is named Current Research Topics in AI for Bioinformatics A1F (Aktuella forskningsteman inom AI för bioinformatik 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 Bioinformatics. It can also be a part of the main field of study in Systems Biology and Bioscience. The disciplinary domain of the course is Natural Sciences.

2. Entry requirements

The course has the following entry requirements: attended BI763A Introduction to AI in Bioinformatics A1N and attended BI764A Bioinformatics Analysis Pipelines for Large-Scale Sequence Data A1N (or equivalent knowledge).

A further 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 language test, e.g. IELTS or TOEFL or the equivalent.

3. Course content

The course addresses the research process from hypothesis formulation, method selection, and analysis to final results and scientific writing. Ethical issues are discussed, including the perspectives of gender equality, digitalization, and sustainability. The course also includes literature search, reference management, and training in scientific writing. Through article studies and seminars, students develop their critical thinking and ability to assess scientific texts.

Particular emphasis is placed on scientific methodology and critical literature review, where students learn to find and evaluate research articles with a focus on AI-related themes in bioinformatics. Students practice formulating and arguing for relevant research questions, as well as presenting and discussing scientific studies. The course prepares students to meet the research and ethical challenges posed by the AI field, thereby strengthening their competence for future scientific work.

4. Objectives

After completion of the course, the student shall be able to:

- critically review and analyze the content of AI-related research articles in bioinformatics, with a particular focus on the use of scientific methods,
- formulate and define a relevant research problem and select an appropriate AI method for bioinformatics,
- orally present and actively discuss scientific articles related to AI in bioinformatics,
- in depth discuss ethical issues and research ethical issues specifically related to AI in bioinformatics,
- thoroughly explain how digitalization, particularly through the application of AI in bioinformatics, can improve health and well-being, and demonstrate knowledge and understanding of how this contributes to sustainable development.

5. Examination

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

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

- **Article seminars**
  2.5 credits, grades: G/U
- **Ethics seminars**
  1 credit, grades: G/U
- **Presentation**
  1 credit, grades: G/U
- **Assignment**
  3 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 consists of lectures, seminars and exercises.

The teaching is conducted in English.

7. Course literature and other educational materials

Scientific articles and web materials. They are listed on a special list provided by the course coordinator.

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.