

## Bioinformatics

Bioinformatik  
6 credits

Programme course

TFTB55

Valid from:

|   |   |  |
|---|---|--|
| <b>Determined by</b>  | <b>Main field of study</b><br>Biotechnology, Chemical Biology,<br>Chemistry |  |
| <b>Date determined</b>  | <b>Course level</b><br>First cycle  | <b>Progressive<br/>specialisation</b><br>G2F |
| <b>Revised by</b>   | <b>Disciplinary domain</b><br>Natural sciences, Technology                  |  |
| <b>Revision date</b>  | <b>Subject group</b>  |  |
| <b>Offered first time</b><br>Autumn semester 2026                 | <b>Offered for the last time</b>  |  |
| <b>Department</b><br>Institutionen för fysik, kemi och<br>biologi | <b>Replaced by</b>  |  |

## Course offered for

- Master of Science in Chemical Biology
- Bachelor's Programme in Chemical Biology
- Master's Programme in Protein Science

## Prerequisites

Biochemistry, Programming, Molecular Genetics

## Intended learning outcomes

The course aims to provide fundamental knowledge in bioinformatics, specifically regarding theories and practical applications of computer-based methods for analyzing nucleotide and protein sequences, as well as studying protein structures. It covers both theoretical understanding and practical skills in using these methods. The course also aims to illustrate the development of the field through examples from the forefront of research.

After completing the course, you should be able to:

- Search, analyze, and interpret data from relevant biological databases
- Use and interpret results from bioinformatic methods
- Plan for new bioinformatics problems and solve them by combining the tools learned in the course.

## Course content

Computer-based methods for analyzing nucleotide and protein sequences and for studying the structure of proteins. Databases and methods for database searches (e.g. UniProt and PDB), Sequence comparisons, sequence alignment (RNA, DNA, and protein), multiple sequence comparisons and multiple sequence alignment, sequence patterns, evolution, protein domains, and protein structure. Use of bioinformatic tools for functional characterization of genes and proteins. Protein structure and molecular modeling. Parts of the course highlight both the underlying theoretical models and biological and biotechnological applications of the methods and computer programs presented.

## Teaching and working methods

Lectures and practical exercises complement each other. Lectures introduce underlying theories and applications, while practical laboratory work illustrates and deepens knowledge of realistic problems and issues.

## Examination

|      |                 |           |            |
|------|-----------------|-----------|------------|
| TEN1 | Written exam    | 4 credits | U, 3, 4, 5 |
| LAB1 | Laboratory work | 2 credits | U, G       |

Grades for examination modules are decided in accordance with the assessment criteria presented at the start of the course.

## Grades

Four-grade scale, digits, U, 3, 4, 5

## Other information

### About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is “Swedish”, the course as a whole could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is “English”, the course as a whole is taught in English. Examination language is English.
- If teaching language is “Swedish/English”, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English depending on teaching language.

### Other

The course is conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

The course is campus-based at the location specified for the course, unless otherwise stated under “Teaching and working methods”. Please note, in a campus-based course occasional remote sessions could be included.