Bioinformatics

Bioinformatik
6 credits

Programme course

TFTB55

Valid from:

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

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.

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Examination

TEN1	4 credits	U, 3, 4, 5
LAB1	2 credits	U, G

Grades

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