

Advanced Bioinformatics

Programme course

6 credits

Avancerad bioinformatik

TFTB46

Valid from: 2017 Spring semester

Determined by

Board of Studies for Chemistry, Biology
and Biotechnology

Date determined

2017-01-25

Main field of study

Engineering Biology, Chemical Biology

Course level

Second cycle

Advancement level

A1X

Course offered for

- Chemical Biology
- Engineering Biology, M Sc in Engineering

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

Biochemistry, Cellbiology, Microbiology, Gene technology and molecular genetics, Bioinformatics.

Intended learning outcomes

In molecular biology, bioinformatics has become an important tool to manage and take advantage of the large amounts of valuable data produced. Computerized analysis has a role as both a support for laboratory projects and a way to extract knowledge from existing data sets. The rapidly growing amount of information, however, there are new requirements to automate and make large-scale analyzes. This course aims to introduce technologies to meet this challenge. The topics covered by the course has many applications, but we select examples from bioinformatics.

After the course you should be able to:

- Working in Unix
- Structuring information for effective computer processing
- Use a scripting language to solve bioinformatics problems.
- Use code libraries in the area to facilitate programming
- Create automated pipelines for various applications.

Course content

Working in Unix, introduction to Python, Good practice for scientific programming. Important code libraries for scientific programming, terminology in bioinformatics, databases and important software / methods.

Teaching and working methods

The teaching consists of lectures and practical exercises. Lectures presents underlying theory and applications. The practical laboratory work aims to exemplify and deepen knowledge on realistic problems and issues.

Examination

LAB1	Laboratory work	3 credits	U, G
UPG1	Written examination	3 credits	U, G

Grades

Two-grade scale, U, G

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Magdalena Svensson

Examiner

Björn Wallner

Education components

Preliminary scheduled hours: 48 h

Recommended self-study hours: 112 h

Course literature

Practical computing for biologists, Steven H.D. Haddock Vetenskapliga artiklar / Scientific articles

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.