



**LUND**  
UNIVERSITY

Faculty of Science

## **BINP27, Bioinformatics: DNA Sequencing Informatics II, 7.5 credits**

*Bioinformatik: DNA-sekvenseringsinformatik II, 7,5 högskolepoäng*  
Second Cycle / Avancerad nivå

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### **Details of approval**

The syllabus was approved by Study programmes board, Faculty of Science on 2014-03-17 to be valid from 2014-03-17, autumn semester 2014.

### **General Information**

The course is a compulsory second-cycle course for a degree of Master in Bioinformatics. The course is also offered as a single subject course. The language of instruction is English.

*Language of instruction:* English

*Main field of studies*

Bioinformatics

*Depth of study relative to the degree requirements*

A1F, Second cycle, has second-cycle course/s as entry requirements

### **Learning outcomes**

The general aim of the course is that students should gain advanced skills in the bioinformatics field related to biological problems.

### **Knowledge and understanding**

On completion of the course the student shall be able to:

- demonstrate advanced bioinformatics skills in genome, transcriptome and amplicon sequencing

## Competence and skills

On completion of the course the student shall be able to:

- process data from high throughput DNA-sequencing
- use algorithms and programmes based on biological understanding
- write own programmes for sequence analysis
- build simple databases and visualise results on the web

## Judgement and approach

On completion of the course the student shall be able to:

- critically evaluate results from bioinformatics analyses

## Course content

After the initial analysis of data, generated with new sequencing methods such as next generation sequencing, the results must be linked to the current problem. Depending on the problem, the continued analysis will require different bioinformatics methods. The course offers a large number of examples of bioinformatics applications to answer different issues e.g. classification of genetic variants, phylogenetic analysis, tests for selection as well as annotation of sequences and enrichment analyses. Emphasis is on large-scale analyses.

The student is also trained in combining data from different analyses. A part of the course consists of an individual project assignment that is solved by means of own programming, where the student can specialise in one or more of the above-mentioned areas.

## Course design

The teaching is mainly carried out as hands on exercises, where the students work with assignments using computers. Each subject starts with a lecture about the current area of interest. In the course, a one week project is included, where the student works independently with a bioinformatics assignment. The work is presented in a written project report. The project is completed with an oral presentation.

## Assessment

The examination consists of compulsory exercises, a written project report, and a written examination.

For students who have not passed the regular examination, an additional examination in close connection to this is offered.

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## **Grades**

Marking scale: Fail, Pass, Pass with distinction.

To pass the entire course, approved compulsory exercises, approved examination, and approved project are required.

The final grade is based on a combination of the results on the examination, the quality of the project, and the student's shown understanding of the exercises.

## **Entry requirements**

For admission to the course, knowledge corresponding to BINP11 Bioinformatics and Sequence Analysis 7.5 credits, BINP13 Programming in Perl 7.5 credits, BINP15 Data Processing and Analysis 15 credits, and BINP26 DNA Sequencing Informatics I 7.5 credits, is required. English B/English 6

## Subcourses in BINP27, Bioinformatics: DNA Sequencing Informatics II

Applies from V14

1401 DNA sequencing informatics, 7,5 hp  
Grading scale: Fail, Pass, Pass with distinction