BINP50, Bioinformatics: Master´s Degree Project, 30 credits
Bioinformatik: Examensarbete - masterexamen, 30 högskolepoäng
Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2017-08-18 to be valid from 2017-08-18, autumn semester 2017.

General Information

The course is elective for a degree of Master of Bioinformatics (120 credits).

Language of instruction: Swedish and English
The course is given in English, but can be given in Swedish, depending on the subject of the degree project.

Main field of studies	Depth of study relative to the degree requirements
Bioinformatics	A2E, Second cycle, contains degree project for Master of Arts/Master of Science (120 credits)

Learning outcomes

The overall aim of the course is that the student should carry out an independent scientific project in a well-defined subject area within the field of bioinformatics.

Knowledge and understanding
On completion of the course the student shall be able to:

- present the subject area and give detailed account for the current knowledge
- give detailed account for the methods used within the subject area and discuss their advantages and limitations

Competence and skills

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

- on basis of the current scientific knowledge, formulate questions of relevance for the development of the subject area
- independently acquire and compile the information required to carry out a scientific project
- compile a project plan including research issues and time plan
- discuss the scientific methods that are applicable within the subject area, and motivate the choice of methods used in the current degree project
- independently, and within a planned time frame, carry out and document a scientific project based on a project plan
- apply the methods required to carry out the degree project
- analyse and compile the results of a project and discuss these in a wider context
- identify future needs for research within the subject area
- organise and write a scientific report and a popular science summary of this report
- give an oral presentation and in-depth discuss the completed degree project

Judgement and approach

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

- critically review information and evaluate its relevance for a scientific project in bioinformatics
- assess his/her knowledge and take responsibility for his/her development within the subject area
- reflect on the potential social and ethical issues related to the objectives, execution and achieved results of the project

Course content

The content and execution of the degree project is planned in consultation with a supervisor. The work shall include literature studies that survey the background of the selected project as well as work with bioinformatics and/or theoretical work. The student shall write a project plan and with a high degree of independence carry out the project, including data collection, documentation of the work as well as compilation, analysis and evaluation of the results. The degree project shall be presented in the form of a written scientific report and as a short popular summary, as well as orally for an examining committee.

Course design

The course is carried out as a project that is planned in consultation with a supervisor with experience within the chosen subject area. The student shall contact a research team or equivalent to find an appropriate project and engage a supervisor. The project may be carried out within or outside the university. The project is carried out under supervision, but with a high degree of independence. A project plan with a time plan shall be compiled. The plan shall also contain ethical aspects, if applicable.

Halfway through the project, an evaluation is carried out together with the supervisor, allowing the examiner to check that the time plan is being followed and that the work is progressing in a satisfactory way. The practical work shall be documented in detail and in accordance with the routines of the workplace. The student shall record his/her working hours and any possible interruptions of the project so that the examiner can assess whether the time plan has been followed.

The student shall write a scientific report including a scientific abstract, as well as a short popular summary directed to a broader audience. The student shall also give an oral presentation of the degree project for the examining committee, if possible at the research department/workplace where the project has been carried out. The student's effort shall correspond to 90 days' of full-time work. The project plan, execution of the project, documentation of the project, half-time evaluation, scientific report, popular summary and oral presentation are compulsory.

Assessment

The examination is conducted in the form of a written scientific report and a short popular summary, as well as through an oral presentation of the degree project. The ability of the student to carry out the project will also be assessed. The examination is carried out by an examining committee in consultation with the supervisor. The examining committee consists of one examiner and one independent reviewer. Other forms of assessment may be used in special cases. If the degree project is not approved during the regular examination, the student is offered the possibility to supplement the work and then have it re-assessed by the examiner.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

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, the following should be approved: the project plan, performance during the project, the half-time evaluation, the written report, the popular summary and the oral presentation.
The final grade is decided through a combined assessment of the student's ability to:

- plan and work independently on a project in a dedicated way
- carry out bioinformatic work and/or theoretical tasks as well as document the work
- analyse and interpret data from a biological perspective
- in writing present the project and the results, as well as structure the scientific report
- discuss the results and put them into a subject area context as well as a wider perspective
- orally present and discuss the project work during the examination

- complete the project within the planned time frame

The grade Pass with distinction requires that the student has shown a high degree of independence and dedication. In addition, the project work, the project plan, the scientific report, and the oral presentation should be of a high quality, and the time frame for the project should not have been exceeded by more than 20%.

Entry requirements

For admission to the course, knowledge corresponding to BINP11 Bioinformatics and Sequence Analysis 7.5 credits, BINP16 Programming in Python 7.5 credits, BIOS13 Modelling Biological Systems 7.5 credits, BIOS14 Processing and Analysis of Biological Data 7.5 credits, BINP26/28 DNA Sequencing Informatics I 7.5 credits as well as BINP27/29 DNA Sequencing Informatics II 7.5 credits, is required. English B/6.

Subcourses in BINP50, Bioinformatics: Master´s Degree Project

Applies from H17

1701   Part 1 - Halftime, 15,0 hp
         Grading scale: Fail, Pass
1702   Part 2 - Final Examination, 15,0 hp
         Grading scale: Fail, Pass, Pass with distinction