



LUND
UNIVERSITY

Faculty of Science

BINP16, Bioinformatics: Programming in Python, 7.5 credits *Bioinformatik: Programmering i Python, 7,5 högskolepoäng* Second Cycle / Avancerad nivå

Details of approval

The syllabus is an old version, approved by Study programmes board, Faculty of Science on 2015-12-18 and was valid from 2016-01-01, autumn semester 2016.

General Information

The course is compulsory for a degree of Master in Bioinformatics and elective for a degree of Master of Science in Biology or Molecular Biology.

Main field of studies

Bioinformatics

Applied Computational Science

Depth of study relative to the degree requirements

A1N, Second cycle, has only first-cycle course/s as entry requirements

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Learning outcomes

The general aim of the course is that the students should receive basic skills in programming in general and in Python in particular, with special focus on applications within bioinformatics.

Knowledge and understanding

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

- demonstrate basic skills in programming
- describe how programming can be applied on problems within bioinformatics
- describe in general terms how a computer functions
- describe the use of command shells in Unix-like environments

Competence and skills

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

- master programming in Python at a basic level
- write programmes for simple sequence analysis
- use command shells in Unix-like operating systems

Judgement and approach

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

- evaluate his/her own skills and ability in relation to the degree of difficulty of a current programming problem

Course content

- Unix command shell
- The hardware and software of the computer
- Mathematical functions, methods and operators
- Functions, methods and operators for strings and regular expressions
- Conditional statements
- Lists, tuples, sets and dictionaries, how iteration works, and which methods and functions that can be applied on these
- Basic I/O (STDIN, STDERR, STDOUT)
- Functions
- Modules
- Classes and objects
- Application of a number of standard modules/packages, such as Bio for biological applications, cgi for web programming, argparse for parsing of command line, and matplotlib for visualisation of data

Course design

The teaching is mainly carried out as hands on exercises, where the students work with assignments using computers. Each section starts with a lecture about the current area of interest.

Assessment

The examination consists of compulsory assignments 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 assignments and approved examination are required. The final grade is decided through a weighing of the results of the examination and the assignments.

Entry requirements

For admission to the course, a degree of Bachelor of Science within a scientific, medical, or technical field of study, is required, and English 6/English B.

Further information

The course may not be included in a degree together with BINP13 Programming in Perl 7.5 credits, or NUMA01 Numerical Analysis: programming in Python, 7.5 credits.

Subcourses in BINP16, Bioinformatics: Programming in Python

Applies from H23

- 2301 Exam - Theory, 4,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 2302 Assignments, 3,5 hp
Grading scale: Fail, Pass, Pass with distinction

Applies from H16

- 1501 Programming in Python, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction