



NBIB20000U Python Programming for Data Science

[COLLAPSE ALL](#) ^

Volume 2021/2022

Education

BSc Programme in Biochemistry

BSc Programme in Biology

BSc Programme in Molecular Biomedicine

MSc Programme in Bioinformatics

Content

This course is an introduction to programming in Python, with focus on data processing and analysis. It includes basic programming concepts such as data types, conditionals, loops, functions, object oriented programming, pattern matching (regular expressions), and computational complexity. In addition, it also provides technical skills relevant to the data science pipeline such as the ability to log on to an external server, and to navigate a Unix shell.

Learning Outcome

Knowledge:

After completing the course, the student will master key programming concepts such as data-types, variables, conditionals, loops, and functions, and have an understanding of the central concepts in object oriented programming, pattern matching and computational complexity. Finally, the student will have acquired an understanding of a Unix/Linux environment, including basic navigation, pipes, networking, and process control.

Skills:

The student is capable of solving small to medium sized programming tasks in Python, in particular tasks related to data processing and analytics. The student can produce programs that are well-written, well-structured, and well-commented. Finally, the student knows how to execute scripts on a remote server, and navigate using a Unix command line interface on such a server.

Competences:

After completing the course, the student is capable of solving the many small to medium size programming tasks that arise in Data Science disciplines, and is able to write well-structured and maintainable programs in Python. The student is also capable of running programs both locally and on remote servers, and be able to navigate in a Unix environment.

The student

- can explain the differences between various data-types in Python and can select the relevant type for a given programming task

- can give a detailed description of conditionals and loops, and is able to explain how loops relate to the complexity of a program
- can motivate the concepts of function and module, and give examples of how these tools should be used to structure code
- can explain the basic concepts of Object Oriented Programming, and give examples of appropriate uses of classes and object
- can identify problems for which regular expressions are well suited, and is able to construct an appropriate regular expression for a given pattern matching problem
- can give examples of how to handle errors in a program
- is capable of independently finding online information about external Python modules, and applying this information to solve a specific task

Literature

See Absalon.

Recommended Academic Qualifications

This is an introductory programming course: no prior programming experience is required. We do assume knowledge corresponding to a basic University-level mathematics introduction course (e.g. Introduction to the Mathematics for the Chemical Sciences).

Teaching and learning methods

Lectures and exercises mixed (6-9 hours per week). Some of the exercises will involve simple Biological examples, but a Biological background is not required for taking the course.

Remarks

Participants are expected to bring a laptop equipped with a network card to class (contact the teacher if not possible).

Workload

Category	Hours
Lectures	21
Preparation	139
Practical exercises	21
Exam	25
Total	206

Feedback form

Written

Oral

Individual

Collective

Continuous feedback during the course of the semester

Sign up

Self Service at KUnet

[As an exchange, guest and credit student - click here!](#)

[Continuing Education - click here!](#)

Exam

Credit

7,5 ECTS

Type of assessment

Written assignment, 5 days/20 hours

Individual, written take-home exam.

Exam registration requirements

Approval of 80% of the weekly exercises.

Aid

All aids allowed

Marking scale

7-point grading scale

Censorship form

No external censorship

Several internal examiners.

Re-exam

Same as ordinary.

80% of the exercises must be handed in and approved no later than three weeks before the reexamination.

If ten or fewer students have signed up for re-exam, the type of assessment will be changed to 30 minutes oral exam, 30 minutes preparation, all aids allowed.

Criteria for exam assesment

See learning outcome

Course information

Language

English

Course code

NBIB20000U

Credit

7,5 ECTS

Level

Bachelor

Duration

1 block

Placement

Block 1

Schedule

B

Course capacity

175

[Course is also available as continuing and professional education](#)

Study board

Study Board for the Biological Area

Contracting departments

Department of Biology

Department of Computer Science

Contracting faculty

Faculty of Science

Course Coordinators

Thomas Wim Hamelryck (thamelry@bio.ku.dk)

Wouter Boomsma (wb@di.ku.dk)

Saved on the 01-03-2021

Timetable

[21E-B1-1;Hold 01;;Python Programming for Data Science](#)

◀ BACK

If you have questions about the course please contact your local Student service.

UNIVERSITY OF COPENHAGEN



CONTACT



SERVICES



FOR STUDENTS AND EMPLOYEES



JOB AND CAREER



EMERGENCIES



EMERGENCIES



WEB



CONNECT WITH UCPH

