Linnæus University

Course syllabus

Faculty of Technology

Department of Computer Science and Media Technology

1DV501 Inledande programmering, 7.5 credits
Introduction to programming

Main field of study
Computer Science

Subject Group
Informatics/Computer and Systems Sciences

Level of classification
First Level

Progression
G1N

Date of Ratification
Approved 2019-12-02
Revised 2022-02-21 by Faculty of Technology. Assessment methods are revised.
The course syllabus is valid from autumn semester 2022

Prerequisites
General entry requirements + Mathematics 3c.

Objectives
After completing the course, students are expected to be able to:
Knowledge and understanding

- A.1 explain basic programming language constructions such as variables, types, control statements and functions, and
- A.2 explain basic algorithms and data structures, and exemplify how and when they should be used.

Competence and skills

- B.1 create and implement a solution to a given problem in the programming language Python,
- B.2 implement given algorithms to solve known types of problems (such as sorting and searching) and reason about their time complexity,
- B.3 install and use tools and libraries used in programming,
- B.4 structure and carry out short oral and written presentations of smaller

programming projects, and
- B.5 document programs and follow program code conventions.

Judgement and approach

- C.1 reason about how well-structured and easy-to-understand a program is, and
- C.2 justify the choice of data structures and algorithms in different scenarios.

Content
The course is an introductory programming course in the programming language Python. Its first part focuses on programming skills and common programming language constructions. The second part of the course introduces well-known algorithms and data structures, how these can be implemented, when they should be used, and simpler reasoning about their time complexity.
The following steps are addressed:

- Computer structure and how programs are executed.
- Development environments, such as editor and interpreter.
- To formulate solutions to problems so that computers can handle them.
- Basic programming language constructions in Python.
- File management.
- External libraries.
- Objects and modules in Python.
- Version management with Git.
- Data structures such as lists, sets, tables and trees.
- Algorithms for searching and sorting.
- Simple estimates of time complexity.
- Code conventions and documentation of code.
- Pair work, problem solving and communication skills

Type of Instruction
The teaching takes place in the form of lectures, teacher-led laboratory work, supervision in a project group and a final presentation. The labs are individual, projects and presentations take place in pairs.

Examination

The examination of the course is divided as follows:

Code	Designation	Grade	Credits
2201	Programming assignment 1	AF	1,50
2202	Programming assignment 2	AF	1,50
2203	Programming assignment 3	AF	1,50
2204	Computer Examination	U/G	1,00
2205	Projects in algorithms and data structures	AF	2,00

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade level, the remaining grades follow in descending order where the grade E constitutes the lowest grade level for passing. The grade F means that the student's performance has been assessed as failed.For a passing

grade on the course, grade G is required for the Computer Exam and at least grade E for other parts. The final grade is determined from: Programming tasks 1-3 (60%) and Projects in algorithms and data structures (40%).Renewed examination is given in accordance with Local rules for course and examination at undergraduate and advanced level at Linnaeus University.If the university decides that a student is entitled to special educational support due to a disability, the examiner has the right to give an adapted test or that the student completes the test in an alternative way.

Objectives achievement

The examination elements are linked to the course objectives in the following ways:

Goal	2201	2202	2203	2204	2205
A.1	☑	☑	☑	☑	
A.2	☑	☑	☑	☑	☑
B.1	☑	☑	☑	☑	☑
B.2			☑		☑
B.3	☑	☑	☑	☑	☑
B.4					☑
B.5	☑	☑	☑		☑
C.1	☑	☑	☑		
C.2					☑

Course Evaluation
During the course or in close connection with the course, course evaluation is carried out. Results and analysis of completed course evaluation shall be promptly fed back to the students who have completed the course. Students who participate in the next course opportunity will receive feedback at the start of the course. Course evaluation is carried out anonymously.

Credit Overlap
The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course: 1DT901, 7.5 credits, 1DV506, 7.5 credits

Other
Grading criteria for the A-F scale are communicated to the student via a special document. The student is informed about the course's grading criteria no later than in connection with the start of the course.

The course is conducted in such a way that the course participants' experiences and knowledge are made visible and developed. This means, for example, that we have an inclusive approach and strive for no one to feel excluded. This can be expressed in different ways in a course, for example by the teacher using gender-neutral examples.

Required Reading and Additional Study Material

Halterman, Richard L. Fundamentals of Python Programming, latest edition (distributed

at course start). Estimated reading: 421 of 654 pages.