Linnæus University

Dnr: LNU-2023/4318

Course syllabus

Faculty of Technology

Department of Computer Science and Media Technology

1DV501 Inledande programmering, 7,5 högskolepoäng
1DV501 Introduction to programming, 7.5 credits

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 2023-11-29 by Faculty of Technology.
The course syllabus is valid from autumn semester 2024

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,
- A.2 explain basic algorithms and data structures, and exemplify how and when they should be used, and
- A.3 explain the basic structure of computers and its most important parts.

Competence and skills

- B.1 Use simple strategies for problemsolving,
- B.2 create and implement a solution to a given problem in the programming language Python,
- B.3 be able to do systematic debugging using the debug tool and printouts,
- B.4 implement given algorithms to solve known types of problems,

- B.5 structure and carry out short written presentations of smaller programming projects, and
- B.6 document programs and follow program code conventions.

Judgement and approach

- C.1 Reason about how well-structured and easy-to-understand a program is,
- C.2 reason about different strategies for problemsolving and debugging, and
- C.3 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 is a smaller project where the students practice and further develop their programming skills.
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 systems and file management.
- External libraries, for example Matplotlip.
- Objects and modules in Python.
- Systematic error handling.
- Error handling with exceptions.
- Data structures such as lists, sets, tables and trees.
- Simple recursion.
- Code conventions and documentation of code.
- 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. The labs are individual and the project can be in groups.

Examination

The examination of the course is divided as follows:

Code	Designation	Grade	Credits
2401	Programming assignment 1	U/G	1,00
2402	Programming assignment 2	U/G	1,00
2403	Programming assignment 3	U/G	1,50
2404	Test, structure of the computer	U/G	1,00
2405	Project	AF	2,00
2406	Programming test	U/G	1,00

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%).Resit examination is offered in accordance with Linnaeus University's Local regulations for courses and examination at the first- and second-cycle levels.
In the event that a student with a disability is entitled to special study support, the examiner will decide on adapted or alternative examination arrangements.

Objectives achievement

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

Goal	2401	2402	2403	2404	2405	2406
A.1	☑	☑	☑			☑
A.2	☑	☑	☑		☑	☑
A.3				☑		
B.1		☑	☑		☑	☑
B.2	☑	☑	☑		☑	☑
B.3		☑	☑			
B.4			☑		☑	
B.5					☑	
B.6	☑	☑			☑	
C.1	☑	☑	☑			
C.2			☑		☑	
C.3					☑	

Course Evaluation

A course evaluation should be conducted during the course or in connection with its conclusion. The results and analysis of the completed course evaluation should be promptly communicated to students who have completed the course. Students participating in the next course instance should be informed of the results of the previous course evaluation and any improvements that have been made, no later than at the start of the course.

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

Liang, Daniel Y., Introduction to Python Programming and Data Structures. Pearson, latest edition. Pages: 400 of 800.