Linnæus University

Course syllabus

Faculty of Technology

Department of Computer Science and Media Technology

1DV030 Förberedande datavetenskap för internationella studenter, 7,5 högskolepoäng

Preparatory Computer Science for International Students, 7.5 credits

Subject

Informatics/Computer and Systems Sciences

Level

First cycle

Progression

GXX

Date of Ratification

Approved 2024-04-08.
The course syllabus is valid from autumn semester 2024.

Prerequisites

General entry requirements + Mathematics 3C + English 6

Objectives

After completing the course, the student should be able to:
Knowledge and understanding

- A.1 Explain the need for and the importance of models in problem-solving,
- A.2 explain the basic structure of computers and its most important parts,
- A.3 describe and explain some modelling and problem-solving strategies, and
- A.4 explain basic programming language constructions such as variables, types, control statements and functions.

Competence and skills

- B.1 Use simple strategies for problem-solving,
- B.2 create and implement solutions to a given problem in the programming

language Python, and
- B.3 use given algorithms to solve known types of problems.

Judgement and approach

- C.1 Reason about how well-structured and easy-to-understand a program is, and
- C.2 reason about different strategies for problem-solving.

Content

The course is an introduction to Computer Science and to problem-solving using the programming language Python. The first part focuses on problem-solving skills using methods and models common to computer science. The second part is an introduction to Python and common programming language constructions. The following steps are addressed:

- Overview of the computer science field.
- 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.
- Code conventions and documentation of code.
- Basic programming language constructions in Python.
- Problem-solving and communication skills.
- Current topics in computer science.

Type of Instruction

The teaching takes place in the form of lectures and teacher-led laboratory work. The labs are individual.

Examination

The course is assessed with the grades Fail (U) or Pass (G).

The student's knowledge is assessed in the form of

- individual programming assignments: 4 credits
- individual written exam: 3.5 credits

The programming assignments are assessed by submission and oral questioning.

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 of the course is divided as follows:
Module 2501 Programming assignment 1 1.0 credits with the grading system UG
Module 2502 Programming assignment 2 1.0 credits with the grading system UG
Module 2503 Programming assignment 3 1.0 credits with the grading system UG
Module 2504 Programming assignment 4 1.0 credits with the grading system UG
Module 2505 Written Exam 3.5 credits with the grading system UG

The examination elements are linked to the course objectives in the following ways:
Module 2501 links to the course objectives: A.3, A.4, B.1, C.1
Module 2502 links to the course objectives: A.3, A.4, B.1, B.2, C.1
Module 2503 links to the course objectives: A.3, A.4, B.1, B.2, B.3, C.1
Module 2504 links to the course objectives: A.3, A.4, B.1, B.2, B.3, C.1, C.2
Module 2505 links to the course objectives: A.1, A.2, A.3, B.3, C.1, C.2

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.

Other Information

Students need to bring their own computers (laptops).

Required Reading and Additional Study Material

Liang, Daniel Y., Introduction to Python Programming and Data Structures. Pearson, latest edition. Pages: 300 of 800.

FTK, Distributed material. Pages 100.