Linnæus University

Dnr: 2021/4756-3.1.2.2

Course syllabus

Faculty of Technology

Department of Computer Science and Media Technology

1DV018 Algoritmer och datastrukturer, 7,5 högskolepoäng
1DV018 Algorithms and Data Structures, 7.5 credits

Main field of study
Computer Science

Subject Group
Informatics/Computer and Systems Sciences

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved by Faculty of Technology 2021-12-13
The course syllabus is valid from autumn semester 2022

Prerequisites
1DV502 Object Oriented Programming, 7,5 credits or equivalent.

Objectives
After finished course, the student shall be able to

- show knowledge of time complexity of algorithms and ability to analyse algorithms with respect to this
- describe different data structures and operations related to them
- use different sorting and searching algorithms
- use a number of strategies on how to create algorithms
- show how data structures, algorithms and strategies included should be applied.

Content
The course includes:

- analysis of algorithms and time complexity
- lists, stacks and queues
- trees
- hashing
- sorting

- graph algorithms
- techniques for algorithm design

Type of Instruction
Teaching consists of lectures and practical assignments. The course can be studied on campus or remotely. Practical assignments are individual or carried out in groups.

The teaching requires access to your own computer, headset, webcam and internet connection.

Examination
The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

Assessment of the students ´s performance is made through

- Exam, 4 credits (U/G/VG)
- Practical work, 3.5 credits (U/G)

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and secondcycle level at Linnaeus University.
If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customised exam or to have the student conduct the exam in an alternative way.

Course Evaluation
During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be 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: - 1DV507 Programming and Data Structures, 7.5 credits,
- 1DV516 Algorithms and Advanced Data Structures, 7.5 credits
- 1DT907 Algorithms, 5 credits

Other
The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

Weiss, Mark Allen, Data Structures and Algorithm Analysis in Java, Pearson Education Limited, latest edition. 632 pages

FTK, Distributed material. Pages 50.