DD2325 Applied Programming and Computer Science 7.5 credits

Tillämpad programmering och datalogi

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for DD2325 valid from Spring 2019

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Degree of Bachelor of Science or corresponding and 15 university credits in mathematics and 6 univeristy credits in computer science or programming techniques. English B, or equivalent.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

An overall goal with the course is to improve the programming technique and the knowledge about program and data structures. This course is given within the Master program Scientific Computing to give the necessary prerequisites for following courses in visualization, parallel programming and high performance computing but can also be taken as an independent course in computer science for English speaking students.

After completing the course the student should be able to

- write structured programs in Matlab and small programs C
- do systematic error search in programs
- describe and use different data types
- use abstraction as a tool to simplify programming
- choose a suitable algorithm for a given problem
- compare algorithms with respect to time and memory needs, complexity
- describe algorithms for searching and sorting
- formulate and implement recursive algorithms
- describe fundamental algorithms for compression
- implement and use stacks, queues, trees, hash tables and hash functions
- use priority queues.

Course contents

Advanced programming in Matlab. Program quality. Testing and error search. Datatypes: boolean, integer, float, array, struct, object. Abstract data types: stack, queue, tree. Searching, sorting, recursion. Hashing. The C programming language. Applications to problems in computer science and numerical analysis.

Course literature

Course literature will be announced at course web page at least 4 weeks before course start.

Examination

- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB3 - Laboratory Work, 1.5 credits, grading scale: P, F
- LAB2 - Laboratory Work, 1.5 credits, grading scale: P, F
- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

In this course all the regulations of the code of honor at the School of Computer science and Communication apply, see: http://www.kth.se/csc/student/hederskodex/1.17237?l=en_UK.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.