



DD1327 Fundamentals of Computer Science 6.0 credits

Grundläggande datalogi

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

Establishment

The official course syllabus is valid from the spring semester 2026 as decided by the Director of First and Second Cycle Education: HS-2025-1964, 3.2.2. Date of decision: 2025-10-14.

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

DD1331 or equivalent (for example DD1310).

Intended learning outcomes

After passing the course, the student should be able to:

- systematically test programs to detect errors

- use abstraction as a tool to simplify programming
- design and document software packages that other programmers can use
- analyze and compare algorithms with respect to time and memory usage
- determine the correctness of iterative and recursive algorithms
- describe and implement basic algorithms and data structures, e.g. depth-first and breadth-first search, binary search, sorting algorithms, binary trees, graphs, hash tables, linked lists
- choose or construct an appropriate algorithm and data structure to solve a given problem
- construct and use regular expressions and simple BNF syntax

in order to

- become good at solving problems with programming
- be able to use computational methods in application projects
- gain sufficient prior knowledge to be able to take advanced courses in computer science.

Course contents

Basic algorithms and data structures: A systematic review of the concepts of abstract data types, stacks, queues, lists, trees, searching, sorting and recursion. Hashing, priority queues, search trees and problem trees, simple syntax analysis and regular expressions.

Algorithm analysis with regard to both efficiency and correctness. Correctness proofs.

Programming: software development methodology, software quality, abstraction, testing, standard libraries.

Examination

- HEM1 - Individual Home Assignments, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Individual Project Assignment, 2.0 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.

Other requirements for final grade

Attendance is mandatory for the exercises where assignments are to be presented.

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.