



DD2358 Introduction to High Performance Computing 7.5 credits

Introduktion till högprestandaberäkningar

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

Establishment

Course syllabus for DD2358 valid from Autumn 2016

Grading scale

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

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Language of instruction

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

Intended learning outcomes

The aim of the course is to give an introduction to skills that are necessary for anyone who should use high performance computers in own projects.

On completion of the course, you should have learnt to

- analyse a given problem to find possibilities for parallelisation
- choose algorithms and hardware to solve computationally intensive problems
- program computers with shared and distributed memory
- efficiently use appropriate programming languages for scientific computations
- run parallel programs on different hardware architectures and software environments
- estimate the performance in different implementations
- optimise the performance of programs.

Course contents

Computer architecture, efficient programming for scientific computations, parallel algorithms, message passing, OpenMP, visualisation, storing of large amounts of data, GRID computing, tools for high performance computing.

Introduction to the hardware and the software at CSC and PDC on different platforms.

Course literature

Course literature to be announced on the course web at least 4 weeks before the start of the course.

Examination

- LAB2 - Project, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Assignments, 3.0 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.

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.