



FDD3258 Introduction to High Performance Computing 7.5 credits

Introduktion till högprestandaberäkningar

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

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

Establishment

Course syllabus for FDD3258 valid from Spring 2020

Grading scale

P, F

Education cycle

Third cycle

Language of instruction

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

Intended learning outcomes

At the end of this course, the student will be able to:

- describe high-performance architectures including GPUs

- design and implement code with OpenMP to use efficiently shared memory systems
- design and implement code with MPI to use efficiently supercomputers
- design and implement code with CUDA to use efficiently systems with GPUs
- analyze the performance and efficiency of different programming approaches

Course contents

This course provides the skills needed to utilize high-performance computing (HPC) resources, and includes an introduction to a range of important topics, such as:

- Modern HPC architectures
- Shared memory programming with OpenMP
- Distributed memory programming with MPI
- GPU Programming with CUDA

Specific prerequisites

The course is suitable for third-cycle students who are interested in high-performance computing.

Examination

- EXA1 - Examination, 7.5 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.

Four assignments must be passed in order to pass the course.

Other requirements for final grade

Four assignments must be passed in order to pass the course.

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.

