



IS2200 Parallel Computer Systems 7.5 credits

Parallella datorsystem

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

Establishment

Course syllabus for IS2200 valid from Autumn 2009

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

Language of instruction

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

Intended learning outcomes

The goals of this course is that the student should:

- understand and be competent in formulating problems for parallel programming,
- have knowledge about the principles of the design of modern parallel computer systems, and
- understand how the performance of a parallel computer is affected by:
 - the particular system architecture,
 - the partitioning of an application and the programming model

Course contents

- Hardware: Architecture of bus-based symmetric multiprocessors (SMPs) and scalable distributed memory multiprocessors (NUMA): cache coherency, memory consistency, synchronization and bus and interconnection network design.
- Software: Models of parallel computation and parallel programming environments, in particular OpenMP (shared memory) and MPI (Message Passing). Parallel algorithms and problem decomposition techniques.
- Performance: performance aspects of parallel programs, the program's interaction with the architecture and performance models (analytic and simulation models).
- Practical part: hand-in assignment which can be parallel programming on a real parallel computer, an architecture study or a combination.

Course literature

Literature is determined one month before course start and announced at course web page.

Equipment

Access to PC (x86 Linux) computer with KTH IP-number.

Examination

- PRO1 - Projekt, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, 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.

Written exam 4,5 hp.

Hand-in assignment 3 hp.

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.