DD2451 Parallel and Distributed Computing 6.0 credits

Parallella och distribuerade beräkningar

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

Establishment

Course syllabus for DD2451 valid from Autumn 2011

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

Upon completion of the course the student should be able to:

- understand and account for models, limitations, and fundamental concepts in the area of message passing and shared memory concurrency, and apply this understanding to example systems and algorithms
- adapt, and design algorithms for execution in parallel and distributed settings, and analyze the algorithms for correctness, reliability, security, and performance.

Course contents

The course is an advanced undergraduate level course in parallel and distributed computing, covering the following topics:

- models, fundamental concepts and reasoning principles for parallel and distributed computer systems, impossibility results
- algorithms and protocols for common computational problems in communication, synchronization, fault tolerance, coordination and consensus, replication and sharing, security, and peer-to-peer systems
- basic familiarity with concurrent programming primitives (semaphores, locks, monitors) and some theoretical interest and proficiency is useful for this course.

Course literature

Course book will be announced at the latest 4 weeks before start of the course. Probably the course will use H. Attiya, J. Welch: Distributed Computing, Fundamentals, Simulations, and Advanced Topics, Wiley. Additional material will be made available.

Examination

- ÖVN1 - Hand-Ins, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 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.

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.