



DD2443 Parallel and Distributed Computing 7.5 credits

Parallella och distribuerade beräkningar

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

The official course syllabus is valid from the autumn semester 2023 in accordance with the decision by the Head of School: J-2023-0605. Date of decision: 03/04/2023

Grading scale

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

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Knowledge in discrete mathematics, 6 higher education credits, equivalent to completed course SF1610/SF1630/SF1662/SF1679/SF1688.

Knowledge in algorithms and complexity, 7.5 higher education credits, equivalent to DD2350/DD2352/DD1352.

Language of instruction

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

Intended learning outcomes

After passing the course, the student should be able to

- account for models, limitations and fundamental concepts within parallel computations with communication based both on message passing and shared memory
- apply and adapt existing algorithms and develop new algorithms for execution on parallel and distributed machines and analyse these algorithms with regard to correctness, security and performance.

Course contents

The course is an advanced course in parallel and distributed computations, dealing with the following subjects:

- models, fundamental concepts and analytical methods for parallel and distributed systems, fundamental limitations and impossibility results
- algorithms and protocols for commonly occurring computing problems in communication, synchronisation, fault tolerance, coordination, consensus and replication, sharing and security, and distributed storing.

The course assumes interest for programming and theoretical issues.

Examination

- TEN2 - Oral exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- UPP1 - Seminars, assignments and labs, 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.

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.