



# DD2452 Formal Methods 7.5 credits

## Formella metoder

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 DD2452 valid from Spring 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 overall aim of the course is to provide a working familiarity with the main methods and tools in the formal methods area, in theory as well as in practice.

After the course, the successful student will be able to:

1. Independently select a suitable modeling approach for some given simple problem;
2. Argue informally and formally for the soundness and limitations of the chosen approach;
3. Identify, specify and verify important system properties using suitable automated or semi-automated tools;
4. Correctly interpret and evaluate the results of the analysis.

For passing the course, a student has to demonstrate the ability to apply the methods discussed in the course; for the highest grade he/she has also to be proficient in the theoretical foundations of these methods.

## Course contents

Part I. Program Verification: Hoare logic, partial and total correctness, verifying concurrent programs, ESC/Java.

Part II. Process Algebra: CCS, equivalence checking, modal and temporal logics, using CWB.

Part III. Model Checking: Promela, LTL, Büchi automata, SPIN.

## Course literature

Michael Huth, Mark Ryan: Logic in Computer Science, Cambridge University Press, 2000

## Examination

- LAB1 - Laboratory Work, 3.0 credits, grading scale: P, 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.

## Other requirements for final grade

Laboratory assignments (LAB1; 3 university credits).

Examination (TEN1; 4,5 university credits).

## 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.