DD2447 Statistical Methods in Applied Computer Science 6.0 credits

Statistiska metoder i datalogin

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

Establishment

Course syllabus for DD2447 valid from Autumn 2009

Grading scale

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

Education cycle

Second cycle

Main field of study

Computer Science and Engineering

Specific prerequisites

Single course students: 90 university credits including 45 university credits in Mathematics or Information Technology. English B, or equivalent.

Language of instruction

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

Intended learning outcomes

After successfully taking this course, you will be able to:

motivate the use of uncertainty management and statistical methodology in computer science applications, as well as the main methods in use,

account for algorithms used in the area and use the standard tools,

critically evaluate the applicability of these methods in new contexts, and design new applications of uncertainty management,

follow research and development in the area.

Course contents

Common statistical models and their use:

Hypothesis choice

Parametric inference

Non-parametric inference

Elements of regression

Clustering

Graphical statistical models

Prediction and retrodiction

Chapman-Kolmogoroff formulation

Elements of Vapnik/Chervonenki's learning theory

Evidence theory, estimation and combination of evidence.

Support Vector Machines and Kernel methods

Stochastic simulation, Markov Chain Monte Carlo.

Course literature

Lecture Notes, Scientific papers, Home Works.

Examination

- INL1 - Assignment, 6.0 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.

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.

Other requirements for final grade

Home Work (INL1; 6 university credits)
Based on learning contract individually worked out for each student.

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.