DA2210 Introduction to the Philosophy of Science and Research Methodology for Computer Scientists 6.0 credits

Vetenskapsteori och vetenskaplig metodik för dataloger

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 DA2210 valid from Autumn 2015

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

On completion of the course, the student should be able to

- account too and analyse scientific theories relevant to research within computer science
- account too and analyse scientific methods relevant to research within computer science
- review scientific articles in computer science regarding theory, method and results critically
- identify methodological problems in a study
- identify ethical problems in different scientific situations and be able to reason about them
- be able to plan and the genomföraskrivandet of a scientific report

Course contents

- The basic concepts within theory of knowledge and scientific methodology, so as causality, data, correlation, hypothesis, induktiva-deduktiva methods.
- Special methods and problem within computer science and mathematics.
- Scientific methodology within ingenjörsprojekt.
- Experimentmetodik.
- Ethics within scholarship and the vetenskaparens role in the society.
- How one reads and writes scientific reports.
- Practical training in the writing of scientific reports (similar degree projects).

Introduction to history of science. Presentation of the most important the issues within theory of knowledge. Methods and concept within natural sciences: Causality, data, correlation, hypotheses and hjälphypoteser, hypothetical - deductive method. Scientific methods within mathematics.
Scientific methods within computer science. Demarkation between scholarship and pseudoscience.
Study of scientific articles. Ethics with a specialisation in scientific ethics. Case studies of ethical problems. Orientation in the social role of researcher.

The course intends to give a broad introduction to theory of knowledge especially with specialisation in
mathematics, natural sciences and computer science. A short overview of history of science is given. The most important
the thoughts within general theory of knowledge are presented and analysed. Poppers and Kuhn scientific philosophy are presented.
The most important general scientific methods within mathematics, natural sciences and computer science
be presented and analysed. Concept as causality, realism and antirealism, hypotheses and

hjälphypoteser be discussed. A review of the ethical problems of the scholarship and the researcher's role is made. Practically work with to write scientific reports (similar degree projects).

Disposition

Lectures that treat theoretical the huvudresultat and basic scientific methods.

Seminars, in which the students joint and be trained individually in to read about, describe and evaluate scientific experiments and reports.

Practical training to write shorter and longer scientific reports that apply the methods and theories that have been gone through in the course.

Course literature

Kurslitteratur meddelas senast 4 veckor innan kursstart på kursens hemsida.

Examination

- HEM1 - Exercises, 1.5 credits, grading scale: P, F
- HEM3 - Essay, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 3.0 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.

Other requirements for final grade

Examination and home assignments.

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.