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.

Establishment

Course syllabus for DA2210 valid from Autumn 2010

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

The aim of the course is to provide a broad introduction to the Philosophy of Science, especially in mathematics and computer science. A short presentation of the history of science is given. The most important ideas in general philosophy of science are presented and analyzed. The philosophies of science of Popper and Kuhn are presented.
The most important general scientific methods in mathematics, science and computer science are presented and analyzed. Concepts as causality, realism and anti-realism, hypothesis and ad hoc-hypothesis are discussed. An overview of the ethical problems in science and the role of the researcher is presented.

After having taken the course the student should be able to

- describe the most important moments in the history of science

- explain the content of the thoughts of several philosopher of science, for instance Popper's and Kuhn's

- analyze a simple mathematical proof and describe the principles that are used in it

- read a scientific paper in science or computer science and describe the principles used in it

- explain the difference between science and pseudoscience

- identify ethical problems in different scientific situations and be able the reason about them.

Course contents

Introduction to the history of science. Presentation of the most important problems in the Philosophy of Science. Methods and concepts in science: causality, data, correlation, hypothesis, hypothetical- deductive method, scientific methods in mathematics. Scientific methods in computer science. The demarcation between science and pseudoscience. Studies of scientific papers. Ethics in science. Case studies of ethical problems. A discussion of the social role of the researcher.

Course literature

Will be announced at course web page at least 4 weeks before course start.

Examination

- HEM1 - Exercises, 1.5 credits, grading scale: P, F
- HEM2 - Essay, 1.5 credits, grading scale: P, 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.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

Examination and homework (exercises and essay).

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.