



FME3513 Philosophy of Science and Knowledge Formation of Engineering 10.0 credits

Vetenskapsfilosofi och ingenjörarbetets kunskapsbildning

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 FME3513 valid from Spring 2011

Grading scale

Education cycle

Third cycle

Specific prerequisites

Language of instruction

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

Intended learning outcomes

To build up an understanding of what is studied and why it is studied. Begin focusing more precise research questions and formulating problems that are both worth knowing and possible to know. Give an insight into and an understanding of other research areas (disciplines, paradigms and traditions) and so also increase the understanding of ones own work. Formulate a research question of ones own (over a smaller area) taking into account relevant literature from philosophy of science as well as other areas.

Course contents

Some traits in the development of philosophy of science

Logical positivism middle 1920ies

Logical empiricism after 1936

The critical rationalism (Karl Popper)

Theories as wholes (Imre Lakatos)

Pragmatism (Ludwig Wittgenstein)

Refocusing towards the formation of knowledge (Thomas S. Kuhn)

Concepts and concept formation

Open concepts

The necessity of examples

Intentionality Some traits in the development of the humanities

The importance of history

Structuralism

The social sciences

Some traits in the development of the sciences

Evolution and revolution (Fleck, Toulmin, Kuhn, Hacking)

Social constructionism (Hacking)

Disposition

The course is arranged as seminars over research issues that are relevant from the point of view of philosophy of science. The course literature and current doctoral theses are used to elucidate the issues. The doctoral students are required to study the literature before the issues are discussed at a seminar. The late seminars are directed to issues and questions that are important for the participants and their particular doctoral projects.

Course literature

Baxandall Michael, Patterns of Intention. On the Historical Explanation of Pictures

Braudel Fernand, Kapitalismens dynamik

Danielsson A., Teknik och humaniora. Ur herr Bos akademi, sid 43-50.

Danielsson A., On decision and other Models of Behavior in Business

Hacking, Ian (1999): The Social Construction of What?

Hughes, Thomas (1983): Networks of Power: Electrification in Western Society, 1880-1930. Baltimore, sid 1-46, 324-350.

Johannesen Kjell S. (1986): Traditioner och skoler i moderne vitenskapsfilosofi. Sigma Forlag A.S. 2 opplag, Bergen.

Johannesen Kjell S. (1988): Tankar om tyst kunskap. Dialoger 6/88, Stockholm. Ingår i **Praxis och tyst kunnande.**

Kuhn Thomas S. (1962, 1970): The Structure of Scientific Revolutions. Second edition. Enlarged. The University of Chicago Press. Chicago.

Nordenstam Tore (1994): Från konst till vetenskap. 2 uppl. Carlsson Bokförlag, Stockholm.

Nordenstam Tore, Exemplets makt

Toulmin Stephen (1961): Foresight and understanding. Hutchinson of London.

Janik Allan (1991): Humanvetenskapernas kardinalproblem - oenighet om begreppens innebörd. Ur **Cordelias tystnad.** Stockholm. sid 26-3

Examination

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

Active, well prepared, participation i the seminars of the course

A paper on the participants own research question

Participation in the Higher Seminar of the department (including Critical Seminars before dissertation)

Participation in current doctoral dissertations

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.