

Course information

Theory and Methodology of Science

About the course

The course provides an introduction to the theory and methodology of science and is intended for the Master student or beginning PhD student. One aim is to supply the basic concepts needed for placing the techniques and knowledge acquired in the student's other courses in the wider context of the natural sciences. Another aim is to provide the basic intellectual tools that allow for a reasoned and critical assessment of results and methods from the wide variety of disciplines that the student is likely to encounter during his or her continued career in research and/or in professional life.

The course is focused on the general theoretical and methodological issues that arise in science. Emphasis is placed on the fundamental problems common in science and on the general strategies, methods and concepts that modern science has developed to address these problems.

Versions of the course

There are three versions of the course; natural science, social science and scientific computing. Each version is available in two different lengths, 4,5 hp or 7,5 hp. All versions are open for both master students and PhD-students.

- AK2030: Natural and technological science, 4,5 hp
- AK2032: Social science, 4,5 hp
- AK2034: Computational science, 4,5 hp
- AK2036: Natural and technological science, 7,5 hp
- AK2038: Social science, 7,5 hp
- AK2040: Computational science, 7,5 hp
- FAK3024: PhD-course, natural and technological science, 4.5 hp
- F1N5112: PhD-course, social science, 4,5 hp
- F1N5113: PhD-course, natural and technological science, 7.5 hp
- F1N5114: PhD-course, social science, 7,5 hp

Course requirements and outline

The course requirements are: attendance at seminars (1.5 hp), final exam (3 hp) and project part (3 hp) (only for those taking the 7,5 hp version of the course). Grading: A-F.

The course is given for PhD students and Masters students simultaneously with joint lectures and consists of lectures (10 x 2 = 20 hrs) and seminars (4 x 2 = 8 hrs). Attendance at the 10 lectures is recommended but not compulsory.

Attendance and active participation at the seminars is **strictly compulsory**, and students who miss a seminar are required to hand in a written assignment instead. For two of the seminars, students are required to read a text and answer questions before the seminar (selected answers are to be handed in at the beginning of the seminar). Students who do not hand in their answers are required to hand in a written assignment after the seminar instead.

The final exam is a written exam consisting of multiple choice questions and short answer questions. No written material can be brought to the exam; just fill your brain and bring a pencil.

PhD students and master students taking the 7,5 hp-version of the course are required to perform additional tasks, tailor-made for PhD-students and for each Masters programme. PhD students are required to write an essay related to methodological issues in his/her own field.

Contact

Answers to most questions about the course can be found in Bilda (see below). Please contact the course administrator if you have other questions. For questions about access to Bilda, see below.

Course administrator:

[Jesper Jerkert](#)

Course director:

[John Cantwell](#)

Literature

Natural science version

- Sven Ove Hansson, *The Art of Being Scientific*, 2007 (available in Bilda)
- A.F. Chalmers, *What Is This Thing Called Science?* Open University Press, 1999 (purchase at bookstores)
- National Academy of Sciences, *On Being a Scientist*, National Academy Press, 1995 (available in Bilda).

Social science version

- Sven Ove Hansson, *The Art of Being Scientific*, 2007 (available in Bilda)
- Malcolm Williams, *Introduction to Philosophy of Social Science* (The whole book, except chapter 7. Available in electronic version through ebrary at KTH Library. The link does not work outside KTH.)

Reading instructions are available in the schedule. Sample exam questions are available in [Bilda](#).

Course website

The Bilda system is a web-based tool that is used to communicate information about the course. To get access to Bilda you need to be signed up for the course in the central grade reporting system (Ladok). The person responsible for your program or your guidance counselor usually does this. The course administrator for this course **cannot** do this.

The address to Bilda is www.bilda.kth.se. You log in with your kth.se account.

Some basic information about the course can also be found at the course [website](#).