AK2030 Theory and Methodology of Science (Natural and Technological Science) 4.5 credits

Vetenskapsteori och vetenskaplig metodik (naturvetenskap)

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 AK2030 valid from Autumn 2023

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

120 university studies in technology or in the natural sciences as well as knowledge of English corresponding to English B/ English 6

Language of instruction

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

Intended learning outcomes

After having completed the course, the student should, with regards to the theory and methodology of science, both orally as well as in writing, be able to:
• Identify definitions and descriptions of concepts, theories and problem areas, as well as identify the correct application of these concepts and theories.
• Account for concepts, theories and general problem areas, as well as apply concepts and theories to specific cases.
• Critically discuss the definitions and applications of concepts and theories as they applies to specific cases of scientific research.

Course contents

The following is an incomplete list of topics covered in the course.

- Scientific knowledge
- Definitions
- Hypothesis testing
- Observations and measurements
- Experiments
- Models
- Statistical reasoning
- Causes and explanations
- Engineering design
- Qualitative methods
- Research ethics
- Risk and risk assessment

Examination

- SEM1 - Seminars, 1.5 credits, grading scale: P, F
- TENA - 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.

- TENA is examined by a digital exam.

- A student may be examined on Sem1 by written assignments that replace attendance at seminars. This applies if there is an agreement that the student is taking the course as a distance course.

Other requirements for final grade

Fulfilled seminar requirements and written exam.

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.