AF2023 Theory and Methodology of Science and Risk and Safety in Building Sciences 7.5 credits

Vetenskapsteori och vetenskaplig metodik och Risk och säkerhet för byggnadsverk

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 AF2023 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Built Environment

Specific prerequisites

30 ECTS from courses in the master's program at advanced level.

Language of instruction

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

Intended learning outcomes

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 mainly focused on the general theoretical and methodological issues that arise in the natural and technological sciences; but basic theoretical issues, techniques and problems from the social sciences are also covered to provide the student with a wider outlook. Emphasis is placed on the fundamental problems common to the natural sciences and on the general strategies, methods and concepts that modern science has developed to address these problems.

The course provides basic knowledge about risk and safety in building and construction work. After completing the course, students should have acquired good knowledge about the most important risk and safety issues in this field of technology. Students should also have acquired understanding of basic concepts in the analysis of societal risks and of basic principles for technical safety management. Students should also be able to apply these concepts and principles in analysis of actual buildings and other structures.

Course contents

Scientific knowledge

Hypothesis testing

Causes and correlations

Observations and measurements

Experiments

Models

Law and explanations

The development of science

Research ethics

Scientific papers and peer review

Safety analysis general, Hashofer/Lind method

Special safety analysis methods for geo structures

Safety analysis methods for steel and concrete structures

Idealisation of structures, Load combination, Methods in standards

Course literature

Hansson S., O., "The art of being Scientific"

Sundquist H.: "Safety, Loads and Load Distribution on Structures " (TRITA-BKN, Report 108)

And distributed articles

Examination

- SEM1 - Seminar, 1.5 credits, grading scale: P, F
- TEN1 - Exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises, 1.5 credits, grading scale: P, 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.

SEM1 - Seminars, 1,5 credits, grade scale: P, F

TEN1 - Examination, 4,5 credits, grade scale: A, B, C, D, E, FX, F

EX1 – Exercises, 1,5 credits, grade scale P,F

Other requirements for final grade

Passed seminar

Passed written exam

Passsed exercises

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.