AK1001 Risk and Safety in the Nuclear Industry 7.5 credits

Risk och säkerhet i kärnteknisk industri

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 AK1001 valid from Autumn 2011

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

At least one full year (60 credits) of university education in areas relevant to the learning goals of the study program. In addition, at least one course comprising elementary statistics and theory of probability.

Language of instruction

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

Intended learning outcomes

After completed course, the student will be able to

- distinguish between different notions of risk and safety,

- account for the basics of risk perception and risk communication,

- display knowledge of the most important principles of risk management in engineering,

- account for the basics of statistical risk analysis,

- display basic familiarity with ethical issues in work related to risk and safety,

- apply concepts and principles from the items above on practical cases taken from the nuclear power domain.

Course contents

In order to discuss precisely safety issues in areas characterized by large potential risks, knowledge of the concepts of risk and safety are needed, as is knowledge of how people perceive risks, different normative theories of risk and safety, and methods for analyzing risks and supplying safety solutions. This is a transdisciplinary area involving, e.g., behavioural science, philosophy of risk, statistics, economics, and engineering sciences. To handle practical issues of risk and safety, notions and analytical tools from several disciplines are needed.

This course aims at giving basic insights into the conceptual and behavioural fundamentals of the risk and safety discourse, as well as a broad orientation of various ways of analyzing risk and safety.

Contents:

- The notions of risk, safety, and uncertainty

- Facts and values in technical risk assessments

- Risk perception

- Risk communication

- Safety engineering

- Basics of statistical risk analysis

- Risk and ethics

Disposition

Lectures, seminars.

Course literature

To be announced at least four weeks before the course starts. Preliminary list:

- Renn, O. (2008). Risk Governance: Coping with Uncertainty in a Complex World.

- Text collection in risk philosophy (c. 150 pages)

- A few articles will be added.

Equipment

None.

Examination

- SEM1 - Seminar Participation, 1.5 credits, grading scale: P, F
- TEN1 - Oral Exam, 3.0 credits, grading scale: P, F
- TEN2 - Written Exam, 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.

Other requirements for final grade

Seminar participation (SEM1; 1.5 credits), oral exam (TEN1; 3 credits), written exam (TEN2; 3 credits).

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.