FSH3002 Safety Analysis of Nuclear Power Installations Engineering Project 9.0 credits

Säkerhetsanalys av kärnkraftsinstallationer

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for FSH3002 valid from Spring 2019

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Recommended prerequisites: Master level in nuclear energy engineering, mechanical or chemical engineering, physics, mechnics, Nuclear Power Safety course (SH2773).

Language of instruction

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

Intended learning outcomes

Intended learning outcomes are achieved if student is able to:

- Perform a critical review of previous work, with respect to the selected technical topic related to the safety of a nuclear power installation,
- Identify major sources of uncertainty in physical phenomena and in the scenario of a hypothetical accident,
- Perform analysis in order to examine selected safety related phenomena and/or scenarios to reduce uncertainty,
- Judge the achieved reduction of uncertainty in risk quantification,
- Suggest what further research activities has to be undertaken in order to provide sufficient reduction of uncertainty for risk informed decision making.

Course contents

Public acceptance of nuclear power depends on confidence in safety of nuclear power installations. The ultimate goal of nuclear power safety (NPS) as engineering discipline is to ensure that release of radioactive materials from nuclear power plants and its effects on plant personnel, public health and environment is As Low As Reasonable Achievable (ALARA). Technical content of NPS addresses Risk as integral measure of both the Probability and Consequences of such radioactive releases from the plant under normal, abnormal and accident conditions, including hypothetical accidents.

The Engineering Project “Safety Analysis of Nuclear Power Installations” aims to provide students with opportunity to analyze in-depth selected technical and physical aspects related to different nuclear power safety issues by performing engineering safety analysis for nuclear power installations.

The student will interact closely with the instructor and senior scientists and experts in the Division of Nuclear Power Safety who will provide guidance in the review and assessment process. The student will also be required to participate in the active research project at the Division of Nuclear Power Safety related to the course’s topic, i.e. attending research meeting, seminars, participating in research experiments. Finally, the student is required to write a technical report, make a presentation to a group seminar, or a project meeting.

Course literature

Scientific articles and technical reports for selected topics related to the safety of nuclear power plants.

Examination

- LIT1 - Literature study, 2.0 credits, grading scale: P, F
- PRO1 - Project work, 4.0 credits, grading scale: P, F
- RAP1 - Report, 2.0 credits, grading scale: P, F

- TEN1 - Oral exam, 1.0 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.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

Approved all four parts in the course

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.