SH2702 Nuclear Reactor Technology 8.0 credits

Reaktorteknologi

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 SH2702 valid from Spring 2009

Grading scale

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

Education cycle

Second cycle

Main field of study

Engineering Physics

Specific prerequisites

At least 120 credits in engineering and natural sciences and knowledge of English B or equivalent.
Recommended Prerequisites: SH2701 or similar course.

Language of instruction

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

Intended learning outcomes

The objective of the course is to provide an overview of nuclear reactor issues that influence on nuclear power safety, economy and environment. After successful completion of the course students will be able to

(a) describe how nuclear reactor operates,

(b) formulate, analyze and solve simple problems which are relevant for reactor physics and thermalhydraulics,

(c) describe typical technical solutions applied in current and future nuclear reactors,

(d) perform simple thermalhydraulic and nuclear design of reactor core,

(e) reflect over thermal margins in a reactor core under normal operation and transient.

Course contents

The course is focusing on the design and analysis of a nuclear reactor with special attention to safety, economy and environment. Example of topics which are covered in the course:

(1) nuclear reactor design and principles of reactor analysis

(2) core design, core operation and fuel design

(3) core reactivity and poisoning

(4) thermal-hydraulics of water cooled reactors

(5) thermal limits in fuel under reactor operation

(6) materials in nuclear systems.

Course literature

Course Compendium is provided by the Department of Nuclear Engineering.

Examination

- INLA - Assignment, 4.0 credits, grading scale: P, F
- TEN1 - Examination, 4.0 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

Four home assignments (INLA, 4 ECTS)
One written exam (TEN1; 4 ECTS)

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.