SH2611 Small Reactors 6.0 credits

Små reaktorer

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 SH2611 valid from Autumn 2018

Grading scale

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

Education cycle

Second cycle

Main field of study

Engineering Physics

Specific prerequisites

Course SH2600 Reactor Physics, or corresponding knowledge

Language of instruction

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

Intended learning outcomes

After the course, the participants should be able to

1. Design a small reactor for production of electricity and heat
2. Analyse the safety performance of small reactors
3. Assess the economics for commercial operation of small reactors

Course contents

Fuel economy in small reactors: Enrichment and control rod worth

Passive safety in small reactors: Reactivity feedback, natural convection and decay heat removal

Severe accidents: Source term and radiological impact on environment

Cost analysis: Captial cost, fuel cost and costs for operation and maintenance

Disposition

Home assignments, Project, Oral presentaion, Oral exam

Course literature

Lecture notes

Examination

- PRO1 - Project: SMR design, 1.0 credits, grading scale: P, F
- SEM1 - Presentation of SMR design, 1.0 credits, grading scale: P, F
- TEN1 - Oral exam, 1.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Home assignment 1: core design, 1.0 credits, grading scale: P, F
- ÖVN2 - Home assignment 2: passiv safety, 1.0 credits, grading scale: P, F
- ÖVN3 - Home assignment 3: servere accidents, 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.

The course is given in close collaboration with nuclear industry.

Grading is based on the performance during the oral exam

Other requirements for final grade

Approved grades at all parts

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.