MJ2405 Sustainable Power Generation 9.0 credits

Uthållig kraftproduktion

Course syllabus for MJ2405 valid from Autumn 07

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

Grading scale: A, B, C, D, E, FX, F
Education cycle: Second cycle
Main field of study: Mechanical Engineering

Intended learning outcomes

After the course the student should be able to

- Understand the principles of different power generation methods, both conventional and renewable
- Analyze the conventional power methods thermodynamically
- Make a simple economical assessment of a power plant
- Perform an environmental assessment and suggest measures for emission control in a power plant
- Compare different power generation alternatives and choose the most suitable for given conditions
- Understand physics of nuclear power and how such a system can be built up
- Describe some of the components in a power plant

Course main content

The first course part about heat and power technology brings up techniqes for large- and small scale electricity and heat generation in power plants fired on biomass, oil, natural gas or coal. Thermodynamic power cycles and analysis, combustion, boilers, emissions, life-cycle-cost and availability are all included in this course part. The second part of the course brings up nuclear reactor technology and nuclear power safety and focuses on BWR and PWR technologies. Here material aspects, fuel cycles and plant control are included. Environment and security issues are brought up.

Language of instruction

Language of instruction is specified in the course offering information in the course and programme directory.

Eligibility

4A1112/MJ1112 Applied Thermodynamics and 4A1601/MJ1401 Heat Transfer or equivalent must be settled

Literature

CompeduHPT; www.compedu.net

Examination

- TEN1 - Examination, 6.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercise, 1.5 credits, grading scale: P, F
- ÖVN2 - Exercise, 1.5 credits, grading scale: P, F

Requirements for final grade

Written exam (TEN1; 6 cr),
exercises (ÖVN1; 1,5 cr), (ÖVN2; 1,5 cr)