MJ2620 Environmental Technology, Advanced Course 6.0 credits

Miljöskyddsteknik, fortsättningskurs

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 MJ2620 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemistry and Chemical Engineering

Specific prerequisites

Previous knowledge is assumed equivalent to MJ2640 Cleaner Production, 6 cr. (3C1352)

Language of instruction

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

Intended learning outcomes

After a passed course the student should be able to:

- Propose and motivate strategies and actions for different environmental problems, based on a system analysis perspective.
- Describe and explain the function of different unit operations that can be used as kidney or recovery function in an industrial production process in order to minimize pollutions to air or water.
- State and describe other process internal solutions to minimize air pollution emissions (through flue gases and evaporation of VOC) and emissions through waste water discharges.
- Describe and explain the function of different process external methods that can be used in order to minimize pollutions to air or water.
- Discuss advantages and disadvantages for different environmental technical solutions.
- Describe and explain different treatment methods for industrial wastes (especially hazardous wastes).
- Propose and motivate the choice of different environmental technical solutions in order to solve or minimize pollutions to air or water from industrial production processes.
- Propose and motivate suitable methods to handle waste flows from industrial production processes.

Course contents

Strategies for a better environment: Cleaner production strategies (process changes, raw materials changes etc.), process external solutions, product changes and other. Advantages and disadvantages using different strategies.

Air pollution control and gas cleaning technology. Process internal solutions (process changes, raw material changes) and external solutions (gas treatment) in order to minimize air pollutions (both gaseous compounds and particles). Two main applications will be discussed – emissions of VOC connected to handling of organic solvents and emissions of flue gases from energy production. Advantages and disadvantages with different methods.

Municipal and industrial waste water treatment. Process internal solutions (process changes, raw material changes) and external solutions (different methods to treat waste water) in order to minimize water pollutions. A number of common applications will be discussed. Advantages and disadvantages with different methods.

Industrial waste treatment. Process internal solutions to minimize waste production. Waste treatment methods especially for handling of hazardous waste.

Course literature

Bibliography will be handed out at the start of the course

Examination

- SEM2 - Seminars, 2.0 credits, grading scale: P, F
- TEN2 - 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.

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.