



MJ2640 Cleaner Production 6.0 credits

Cleaner Production

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 MJ2640 valid from Spring 2010

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

At least 150 academic credits (ECTS) in a program of engineering or natural science or the course MJ1502 or MJ1500 or MJ2611 or corresponding knowledge.

Language of instruction

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

Intended learning outcomes

The overall aim of the course is to provide theoretical and applied knowledge and understanding of strategies and technologies used in implementing cleaner production methodologies in industry. The course will also provide knowledge about the planning and evaluating cleaner production projects.

This means that after the course the student should be able to:

- Describe and comment the evolution of corporate environmental management strategies and its relation to the concept of sustainable development
- Describe in general terms unit operations for Cleaner Production measures for liquid (water) and gas streams.
- Describe Cleaner Production measures for energy and water conservation
- Describe and explain energy and material balances for processes as part of a Cleaner Production investigation
- Describe and propose the methodology for implementation Cleaner Production projects in industrial enterprises based on process and case-study descriptions. Describe and motivate the selection measures for Cleaner Production solutions in the studied cases.
- Perform financial calculations to support the evaluation and decision of CP measures
- Develop and implement CP projects
- Write a project report according to instructions in the course documentation, present and discuss the report at a seminar and oppose on the report of another group of students.

Course contents

The course covers the practical tools used for the development, evaluation and implementation of cleaner production and eco-efficiency opportunities in companies, with particular emphasis on cleaner production assessment methodology and its practical application in different industrial settings.

The course will introduce Cleaner Production in a Sustainable Development Perspective and give a historical perspective on the evolution of Cleaner Production.

Basic concepts of Cleaner Production

The use of Extended Mass- and Energy balances and unit operations as basis for the implementation of Cleaner Production

Energy and Water Conservation Strategies in Cleaner Production

Process Management, Product Design and Material selection as components of Cleaner Production development

Financial calculations to support the evaluation and decision of Cleaner Production measures

Disposition

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|---------------------|------|
| Lectures | 12 h |
| Seminars | 12 h |
| Project work | |
| Written examination | 4 h |

Course literature

- UNEP (2002) Global status 2002: Cleaner Production http://www.uneptie.org/pc/cp/library/catalogue/regional_reports.htm#cpgs2002
- Nilson, L. ed. (2006) Cleaner Production - Technologies and tools for resource efficient industrial production, Baltic University Program.

Examination

- PROA - Project Work, 2.5 credits, grading scale: P, F
- SEM1 - Exercise, 1.0 credits, grading scale: P, F
- TENA - Examination, 2.5 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.