



# KH1242 Sustainable Development and the Chemical Engineer 6.0 credits

Hållbar utveckling med kemiingenjören

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

## Establishment

Course syllabus for KH1242 valid from Autumn 2017

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

Completed upper secondary education including documented proficiency in Swedish corresponding to Swedish B, and English corresponding to English A.

Completion of upper-secondary school from 1 July 2011 and adult education at upper-secondary level from 1 July 2012 (Gy2011)

**General entry requirements and specific entry requirements:** Physics 2, Chemistry 1 and Mathematics 3c. A pass in each of the subjects is the lowest acceptable grade.

Completion of upper-secondary school before 1 July 2011 and adult education at upper-secondary level before 1 July 2012

**General entry requirements and specific entry requirements:** Mathematics D, Physics B and Chemistry A. The grade Passed or 3 in each of the subjects is required.

## Language of instruction

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

## Intended learning outcomes

The purpose of this course is to help you:

- Gain greater knowledge of the various activities in which the engineer as one of several participants deals with environmental, economic and social affairs aiming at a sustainable development.
- Gain a greater understanding of the necessity to engineer with herability to influence nature adopts an approach in which the precautionary principle prevails.
- Understand how products and services can be developed in order to better respond to a sustainable society.
- Develop your ability to analyze a product or service in a structured and methodic way and to propose improvements from an environmental perspective.

After the completed course, the student should be able to:

- Describe the changed environmental aspects of nature and society and how they gave rise to different environmental impacts during the past half-century.
- Develop the concept of Sustainable development by relating to ecological, economic and social aspects.
- Show how the laws, regulations and instruments are used in environmental contact between the chemical engineer and authorities.
- Provide examples of system effects of cleaner production strategies in comparison with "end of pipe"-action from a sustainability perspective.
- Find and compile relevant data on materials and chemicals to prevent environmental damage, as well as protect from damage of their own and others work environment.
- Use a system analytical method on a product or a service and propose environmental improvements.
- Interpret an environmental text and make your own assessments of the text from a sustainability perspective.

## Course contents

### Environmental effects:

Ecological foundations

Local as well as global effects

Effects related to chemicals management

**International and national instruments:**

Sustainable development, in a broader perspective

International environmental cooperation

National laws and instruments

**Actions in Sustainable development strategies:**

Strategies for cleaner production

Cycles

Sustainable technology development

**Sustainable development work in practice:**

Searching in chemical and environmental databases

Systematic work with the collection and assessment of product or service

Environmental Management Systems

**Exercise, making a value judgment:**

Sustainable development related text review of newspaper article

## Course literature

Ammenberg & Hjelm, Miljöteknik-för en hållbar utveckling, ISBN 978-9-44-09275-1.

Lecture notes

## Examination

- INL1 - Home Assignments, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN2 - Assignments, 4.0 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.

If the course is discontinued, students may request to be examined during the following two academic years.

## **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.