



KE2351 Risk Analysis and Management for Chemical Engineers 7.5 credits

Riskanalys och riskhantering för kemiingenjörer

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

Establishment

Course syllabus for KE2351 valid from Autumn 2024

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemical Science and Engineering

Specific prerequisites

Completed bachelor's degree project 15 credits, 30 credits of chemistry/chemical engineering, 20 credits mathematics. English 6/B

Language of instruction

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

Intended learning outcomes

- Describe chemical hazards and relevant hazardous situations (TEN1)
- Explain the principles the principles behind chemical risk assessment and management (TEN)
- Describe methodologies and tools for risk assessment and how these are used (TEN1)
- Apply the “what-if” method to a selected hazardous environment and determine/evaluate risks (INL1, SEM1, PRO1)
- Outline the differences and commonalities between environmental and human health risk assessment (TEN1)
- Outline the major regulatory frameworks, especially GHS, REACH, AFS, and IEC 61511 in Sweden and Europe (TEN1)

Course contents

The course deals with risk analysis and management in relation to handling chemical as well as work situations in industrial processes. The following is included:

- Chemical hazards
 - Flammability
 - Stability/explosivity
 - Toxicity/corrosiveness
 - Environmental risks, persistence, bioaccumulation
- Hazards in process industry
- Hazards in handling chemicals in laboratory environment
- Risk analysis and management theory
 - History
 - Case studies and practical examples
 - Methodologies (e.g. what-if analysis, HAZOP, Fault Tree Analysis, event analysis, etc)
- Legislation and standards in Sweden, EU and internationally

Examination

- SEM1 - Seminar, 0.5 credits, grading scale: P, F
- INL1 - Individual assignment, 0.5 credits, grading scale: P, F
- PRO1 - Project assignment, 2.0 credits, grading scale: P, F

- **TEN1** - Written exam, 4.5 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.