



# FCK3330 Hydrogen 6.0 credits

Vätgas

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

## Establishment

Course syllabus for FCK3330 valid from Spring 2025

## Grading scale

P, F

## Education cycle

Third cycle

## Specific prerequisites

Eligible for studies at the third-cycle level in the subject Chemical Engineering or equivalent.

## Language of instruction

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

## Intended learning outcomes

The overall goal for the participants is to acquire knowledge about the production, storage, distribution and use of hydrogen.

After successfully completing the course, students must be able to:

- Describe operating principles, performance measures and characterization methods for electrolyzers and fuel cells.
- Explain how operating conditions, material selection and design affect the properties of electrochemical energy converters.
- Compare technologies for hydrogen storage and distribution.
- Discuss areas of application and system aspects, including making choices and evaluate technologies and be able to inform others about the technology.

## Course contents

The course mainly addresses the following areas:

- Production of hydrogen: functional principles, materials, design, properties and performance of different types of electrolyzers for hydrogen production and comparisons with other hydrogen production methods.
- Storage and distribution of hydrogen: comparison of different technical solutions.
- Use of hydrogen gas: functional principles, materials, design, properties and performance of different types of fuel cells. Use of hydrogen for transport, industry, the electricity grid and the production of fuels and chemicals.
- The hydrogen society: system integration, socio-economic and political aspects, safety, circularity and sustainability.

## Examination

- TEN1 - Examination, 4.0 credits, grading scale: P, F
- PRO3 - Project, 2.0 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.

