ML0023 Chemistry for Technical Preparatory Year I 9.0 fup

Kemi för basår I

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

Establishment

The official course syllabus is valid from the autumn semester 2025 as decided by the Faculty Board: dnr PA-2025-0010. Decision date: 2025-08-27

Grading scale

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

Education cycle

Pre-university level

Specific prerequisites

Intended learning outcomes

The overall outcome of the course is to make the student well prepared for engineering studies at KTH and to provide an understanding for chemistry and its role in our society.

Intended Learning Outcome

On completion of the course the student should be able to:

1. Laboratory work

perform chemical experiments, related to selected parts of the course content, with satisfactory precision and from a satisfying safety and environmental point of view. The student

should also be able to process, interpret and report the results in both written reports as well as oral presentations.

(Learning outcome 1 will be examined in LAB1.)

1. Models

understand and explain chemical and physical properties of matter based on atomic model theory, the chemical composition of substance and the periodic table of elements.
(Learning outcome 2 will be examined in TENA.)

1. Reactions

describe different types of chemical reactions and write balanced chemical equations.
(Learning outcome 3 will be examined in TENA.)

1. Calculations

perform calculations on chemical compounds in different aggregation forms, in solutions and in chemical reactions.
(Learning outcome 4 will be examined in TENA.)

Course contents

Matter and chemical bonding

- Models and theory of the structure and classification of matter.
- Chemical bonding and its effect on, for example, properties, abundances and applications of organic and inorganic compounds.

Chemical reactions and changes

- Acid base reactions, including the concept of pH and buffer solutions.
- Redox reactions, including electrochemistry.
- Precipitation reactions.
- Energy conversion in chemical reactions and phase transitions.

Stoichiometry

- Basic nomenclature of chemical compounds and writing balanced chemical equations.
- Reaction stoichiometry, concentrations, limiting reactant and chemical yield in chemical reactions.

Analytical chemistry

- Quantitative and qualitative methods for chemical analysis, e.g. reagents and titration.

Examination

- TENA - Written examination, 7.0 fup, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 2.0 fup, 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.

Other requirements for final grade

Final grades are given if all examination parts are approved. The final grade is based on the points in the examination.

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.