



F3B5202 Statistical Mechanics

6.0 credits

Statistisk mekanik

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 F3B5202 valid from Spring 2009

Grading scale

undefined

Education cycle

Third cycle

Specific prerequisites

1. Three years of study at the School of Chemistry, Chemical Engineering, KTH, or corresponding knowledge.

Language of instruction

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

Intended learning outcomes

To give the students an introduction to statistical thermodynamics with special reference to its chemical applications.

Course contents

The course concentrates on systems with weak interactions:

- The Boltzmann distribution and the statistical interpretation of entropy.
- Orientation about Fermi-Dirac och Bose-Einstein statistics.
- Molecular partition functions. Calculation of thermodynamic state properties.
- The translational, rotational and vibrational partition functions for a free molecule.
- The Einstein and Debye models for simple crystals.
- The ideal gas.
- Calculation of equilibrium constants from spectroscopic data.
- Calculation of adsorption isotherms.
- Simple liquids and critical phenomena.
- Regular mixtures and phase separation.
- The Flory-Huggins model for polymer solutions.

Course literature

D.A. McQuarrie: Statistical Thermodynamics, University Science Books 1973.

Examination

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.

Other requirements for final grade

Written or oral exam, 6 credits.

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.

