



MH2059 Materials Structures II

7.5 credits

Materials strukturer II

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

Establishment

Grading scale

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

Education cycle

Second cycle

Main field of study

Materials Science and Engineering

Specific prerequisites

Knowledge in thermodynamic modelling and phase transformations equivalent to contents of MH2057 Computational Thermodynamics and MH2055 Materials Structures I.

Intended learning outcomes

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

1. Explain concepts and phenomena related to diffusion in binary and multicomponent systems.

2. Perform analytical calculations of diffusion problems.
3. Simulate a heat treatment process for a steel alloy using DICTRA software and analyze the results.

Course contents

- Theory of diffusion in single-phase materials
- Driving force for diffusion
- Thermodynamic factor and mobility
- Fick-Onsager's law for multi-component diffusion
- Heat treatment processes for steel
- Analytical methods to solve diffusion problems
- Introduction to the software DICTRA

Examination

- DAT1 - Computer assignment, 1.0 credits, grading scale: P, F
- LAB1 - Laboratory work, 1.5 credits, grading scale: P, F
- TEN1 - Written exam, 5.0 credits, grading scale: A, B, C, D, E, FX, 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.