MH2042 Simulation and Modeling Toolbox 6.0 credits

Verktygslåda för simulering och modellering

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

Establishment

The official course syllabus is valid from autumn semester 2026 as decided by the Director of First and Second Cycle Education. Decision date: 2026-04-15

Grading scale

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

Education cycle

Second cycle

Main field of study

Materials Science, Materials Science and Engineering

Specific prerequisites

At least 150 credits in engineering.

Intended learning outcomes

After the course you should be able to.

- Define and setup a materials process problem using common commercial software.

- Apply the equations of change on materials process problems.
- Interpret the simulation results.
- Have some basic knowledge of the limitations of the software.
- Plan a project and present the results in a scientific manner, both orally and written.

Course contents

- Introduction to simulation methods, limitations and possibilities in general.
- Review of some of the modeling software today.
- Exercises introducing the students to some modeling software, including limitations and possibilities of the specific software.
- Selection and planning of a modeling problem.
- Solution of the modeling problem project.
- Written and oral presentation of the project.

Examination

- SEM1 - Seminar, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project Assignment, 4.0 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.

Dragon's Den - Problem Formulation Seminar

During the problem formulation presentation (max 5 minutes!) a few external "venture capitalists" will judge your projects based on your presentations

Important Points:

- Background (including state-of-the-art)
- Goal with project and also time to accomplish the goals.
- Deliverables (some means to show you have achieved the goals).

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.