



# FMH3925 Modeling in the Materials Science and Engineering Field 7.5 credits

## Modellering inom materialvetenskap

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

On 05/10/2022, the Dean of the ITM School has decided to establish this official course syllabus to apply from autumn term 2022 (registration number M-2022-1647).

## Grading scale

P, F

## Education cycle

Third cycle

## Specific prerequisites

A master's degree or Master of Science in Engineering, Physics or Chemistry 300 credits.

## Language of instruction

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

## Intended learning outcomes

Display problem solving capabilities using state-of-the-art modeling methods in the diverse field of materials science and engineering.

## Course contents

Today modeling is an indispensable tool in Materials Science and Engineering. As a researcher within the field is vital to have a good understanding of the different approaches that are available. Even if the researcher focuses on one or a few of the areas mentioned, a broad picture will undoubtedly help in collaborative efforts where many different areas of modeling are included. Multidisciplinary projects are expected to increase in importance the coming years. This course gives a broad overview of some of the possibilities and tools that can be used. Ranging from physical modeling of fluid behavior, Computational Fluid Dynamics, Monte Carlo Modeling, Thermodynamics Modeling and well as Density Functional Theory and Molecular Modeling. The target audience for the course is PhD students and researchers within the materials field, that seek to enhance their knowledge in the modeling capabilities and therefore increase their capacity to formulate research based on several types of modeling from processes, properties and structures.

## Examination

- INL1 - Exercise, 4.5 credits, grading scale: P, F
- PRO1 - Project, 3.0 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.

## 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.