MH2280 Simulation and Modelling in Materials Processing 6.0 credits

Simulering och modellering inom materialens processteknologi

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

Establishment

On 15/10/2019, the Dean of the ITM School has decided to establish this official course syllabus to apply from spring term 2020 (registration number M-2019-2231).

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

Basic knowledge of CFD modelling and simulation equivalent to the course MH2042 Simulation and Modeling Toolbox.

Language of instruction

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

Intended learning outcomes

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

- Apply CAD and CFD simulation software for industrial flow phenomena
- Assess and evaluate the quality of numerical results and the efficiency of numerical methods
- Carry out detailed verification and validation analysis of CFD results
- Analyse the CFD results by means state-of-the-art visualisation tools
- Write a simulation report and present research results orally

Course contents

Modelling of a complex industrial process can take place from a number of different sources including the geometry, flow physics, flow solutions, high performance computing and big data visualisation.
This implies that there still are major technical challenges to model industrial CFD applications. The principles of Computational Fluid Dynamics (CFD) will be dealt with during lectures and through integrated use of CAD and CFD software during computer exercises, to be able to solve, individually or in groups, an industrially relevant problem.

Examination

- PROA - Project, 6.0 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.