



MH2280 Simulation and Modeling in Materials Processing 6.0 credits

Simulering och modellering inom materialens processteknologi

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 MH2280 valid from Autumn 2007

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

4M1335 Materials Processing, 5 cr
4M 5303 Fluid Mechanics and Heat Transfer, 4 cr or equivalent,

Language of instruction

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

Intended learning outcomes

To give knowledge of available methods for modelling and simulation of manufacturing processes like casting and plastic forming to give an understanding of the possibilities of simulation of these processes.

Course contents

The course gives an outline of different numerical simulation techniques such as the finite difference method and the finite element method for simulation of fluid flow, heat conduction and convection. These phenomena are basic phenomena that occur in different manufacturing processes.

Examples of the analysis of some processes using these simulation methods are done in application such as casting and plastic deformation.

Three projects will be carried out using different simulation techniques. The projects are to be presented in written reports and presented orally.

Course literature

J.A. Dantzig, C.L.Tucker, Modelling in Materials Processing and pre-prints.

Examination

- PRO1 - Project, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 3.0 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.

Other requirements for final grade

A written report is to be handed in. The work is later subjected to an oral presentation where the individual group members are scrutinized on the performance of the projects. Examination (TEN1; 2 cr), and project task (PROJ; 2 cr).

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.