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

Course syllabus for MH2280 valid from Autumn 2012

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

The students should have basic knowledge in modelling and simulation.

Knowledge about the software is not required. The students need to be familiar with the manufacturing or materials process which they like to choice for the project.

Language of instruction

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

Intended learning outcomes

The student should be able to:

- Apply fundamental concepts of computer simulation and its role in manufacturing and materials processing problem solving.
- Develop and model manufacturing and materials processing problems and apply procedures for modelling systems using a commercialized modelling software.
- Use the advantages of simulation and modelling for taking decisions in materials processing problems.
- Demonstrate the need to incorporate simulation and modelling considerations throughout the design and execution of a project aiming at identifying its limitations and ways of improvement.

Course contents

This course provides fundamental and practical knowledge of computer simulation and modelling techniques and its role in materials processing and manufacturing problem solving.

It covers such topics as models and model building, applications of simulation in manufacturing and materials processing issues and introduction to COMSOL Multiphysics modelling.

The course is designed to be both broad in scope and practical in its applications covering areas such as heat transfer, fluid flow, plasticity, two phase flow and chemical reaction engineering.

Course literature

Excerpts from various books, manuals and review articles will be used for background information.

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.