MH2000 Experimental Methods 6.0 credits

Experimentella metoder

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 MH2000 valid from Autumn 2007

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

The course will require basic knowledge obtained in 4H1806 Materials Physics, 4H1114 Micro and nanostructures, and 4H1951Thermodynamics of Materials

Language of instruction

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

Intended learning outcomes

The aim of this course is to provide the students with basic understanding, knowledge and some practical experience with various experimental techniques including the state-of-the-art modern methods of materials analysis and a whole range of high-temperature experimental techniques for measurements of thermochemical and thermophysical properties of high temperature systems.

Course contents

An introduction to the principles of measurement of temperature, pressure and other basic parameters as well as the techniques of experimental design, furnace arrangements, gas purification and vacuum technology will be provided. The course will also deal with experimental techniques for kinetic studies. Processing of experimental data and basic ideas of error analysis will also be taken up as part of the course.

An introduction to frontline techniques in analysis and characterisation of materials will be given. Most advanced methods for versatile visualization and analysis will be covered. Some of the techniques in focus will be: Scanning and Transmission Electron Microscopy, Scanning Probe Microscopy methods, X-ray Diffraction, etc. Laboratory project assignments will be available.

Course literature

Course book. Handouts. Compendium

Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- PRO1 - Project, 1.5 credits, grading scale: P, 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

Laboratory work and exercises (LAB1; 1p),
Project assignment (PRO1; 1p)
Written exam (TEN1; 2p)

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.