MH2277 Physics for Materials Science 6.0 credits

Fysik för materialvetenskap

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

Establishment

Course syllabus for MH2277 valid from Spring 2011

Grading scale

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

Education cycle

Second cycle

Main field of study

Materials Science, Materials Science and Engineering, Engineering Physics

Specific prerequisites

Registered at the master program TTMVM, or a BSc exam

Language of instruction

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

Intended learning outcomes

The aim of the course is to give the students knowledge about the most important material properties used in modelling of materials processes, and also to give the students the means to understand the physics behind the properties of materials in order to model a process to optimize these properties

Course contents

After completed course the students will have knowledge of:

- Atomic structure in different types of materials, especially metals.
- The properties of gases derived from the Boltzmann statistics.
- Thermodynamic laws as well as basic kinetics for chemical reactions.
- Diffusion in solids and liquids.
- Theoretical analysis and analytical relations for heat capacity, thermal conduction in solids and liquids.
- Magnetic and electrical properties in solids and in semi-conductors as well as the effect of doping elements

Course literature

H. Fredriksson, U. Åkerlind. Physics for Materials Processing.

Examination

- ÖVN1 - Exercise, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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.