MH1070 Perspectives on Materials Design 13.5 credits

Perspektiv på materialdesign

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

Establishment

The official course syllabus is valid from the autumn semester 2026 as decided by the Faculty Board: PA-2026-011. Decision date: 2026-08-26.

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Completed upper secondary education including documented proficiency in English corresponding to English A. For students who received/will receive their final school grades after 31 December 2009, there is an additional entry requirement for mathematics as follows: documented proficiency in mathematics corresponding to Mathematics A.

And the specific requirements of mathematics, physics and chemistry corresponding to Mathematics E, Physics B and Chemistry A.

Intended learning outcomes

After the course the student should be able to:

• Briefly describe the structure of metals, ceramics, polymers and fiber-based materials
• Briefly describe the characteristics of metals, ceramics, polymers and fiber-based materials
• Be able to make considerations on choice of materials for certain applications / end-products
• Briefly account for recycling processes for the most common materials
• Implement a project in groups and present it orally and in writing
• Search and retrieve information from libraries and the Internet
• Solve numerical and analytical problems using computer programs

Course contents

Part 1:Introductory Materials Science: This part of the course gives an overview of the dicipline of materials science. After this moment the students should understand the basic materials science concepts, materials and principles for materials design. Invited lecturers from KTH Materials Science and Fibre and Polymer Technology, as well as industry representatives introduce and inspire further learning in various materials fields. A field trip with visits to some companies in various areas of materials will be implemented.

Part 2: Materials Project: This part of the course practice materials selection or materials design in projects. Training in group dynamics and collaboration, creativity and imagination. It also deals with oral and written communication and study skills, and information retrieval. The lectures will present and discuss briefly organic and inorganic materials (metals, ceramics, polymers and fiber-based materials).

Part 3: Problem Solving with Matlab: This part provides an introduction to programming /technical calculations and how some mathematical and materials science problems can be solved by using vector/ matrix handling, conditionals and repetition rates.

Examination

- PRO1 - Project, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- STU1 - Field Trip, 0.5 credits, grading scale: P, F
- TEN1 - Written examination, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB2 - Computer Laboratory Work, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 0.5 credits, grading scale: P, F
- OVN1 - Exercises, 0.5 credits, grading scale: P, 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.

Transitional regulations

Contact the course coordinator

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.