MH1025 Design, Profiling Course 6.0 credits

Profilering inom Materialdesign

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

Establishment

Course syllabus for MH1025 valid from Spring 2016

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Basic knowledge of metals, ceramics, polymers and fiber materials as well as in sustainable development equivalent to that achieved after completing the basic course in Perspectives on Materials Design.

Language of instruction

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

Intended learning outcomes

After completing the course the student should be able to:

- Describe the relationship between the manufacturing process, material structure and properties of metals, ceramics, polymers, fiber and composite materials.

- Analyze and characterize the structure - process - properties of one or more of man or of nature developed materials.

- Introduce and evaluate the gained materials insights into a materials science perspective, through a mentor-supervised project work.

- Structure and document the project work by formulating targets and goals.

- Present a project task in a written technical report, as well as through a scientific presentation.

- Describe and discuss the basic concepts in the theory of organization and gender.

- Describe and discuss what sustainable development means in some technical areas from a reflective perspective.

Course contents

Introductionary part (NÄR1). This part will inspire and concretize the theoretical knowledge of material science and illustrate the material design concept (process - structure - properties). It will in this part be concretized through examples of nature and man's way to build structures of different levels from nano to macro scale. Researchers from material related industries and universities will participate as guest speakers. The ntroductory part consists of compulsory lectures in period 3 and 4.

Project part (PRO1). A material and / or a material production process is examined in detail in small groups (4-6 students) under the supervision of a mentor. The mentor and student group should meet regularly to review the implementation of the project, usually once /week. The project work will be presented in writing (English) and oral (Swedish) at a seminar. A project team should at the seminar as well oppose on another group's presentation. Dividing into project teams is done by the course responsible and are based on priorities received from the students about the different suggested projects. Grading is based on group effort and requires equal commitment from all members of the group, but a single team member can get a differing grading than the others.

Practice part (ÖVN1). This part will provide basic knowledge on theories of organization and gender, gender equality and diversity in technical and scientific environments and a deeper knowledge of sustainable development in materials design. Sustainability section includes; concepts and definitions, systems and resources, sustainability boundaries, as well as climate change. Opportunity for reflection and discussion on sustainability issues are central to the engineers are also included.

Course literature

Utdelat material

Dahlin, J-E, Hållbar utveckling – en introduktion för ingenjörer, Studentlitteratur

Examination

- ÖVN1 - Exercises, 1.0 credits, grading scale: P, F
- PRO1 - Project, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- NÄR1 - Attendance, 1.0 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.

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.