



Faculty of Technology and Science
Mechanical and Materials Engineering

Syllabus

Course Approval

The syllabus was approved by the Faculty Board of Technology and Science on 29 May 2012, and is valid from the Autumn semester of 2009 at Karlstad University.

Course Code: MTAE11

Project work on future Engineering Materials, 7.5 ECTS Credits
(Projektarbete kring framtidens material, 7.5 Swedish credit points)

Degree Level: Master

Progressive Specialisation: A1N (Second cycle, has only first-cycle course/s as entry requirements)

Language of Instruction

Swedish or English

Prerequisites

Mechanical Engineering 75 ECTS cr, including courses in materials engineering 20 ECTS cr and solid mechanics 7.5 ECTS cr, or equivalent

Major Field of Study

MTA (Mechanical Engineering)

Learning Outcomes

Upon completion of the course, students should be able to:

- demonstrate specialised knowledge and understanding of new materials, their production, properties, structure and use,
- collect and assimilate information on engineering materials at a high technological or scientific level,
- process the information from the perspective of technical application,
- write and present a report at a high technological or scientific level.

Content and Form of Instruction

The development of new materials is rapid and some of the recently developed groups of materials are, for instance, nanomaterials, semiconductor materials, and solar cell materials. Materials development also takes place in a gradual processing of existing and established materials such as steel, aluminium and powder-based materials.

The course deals with examples of new or advanced frontline materials.

The course includes lectures and a project.

Lectures

The lectures treat different examples on the basis of current articles and other information on engineering materials. The background material and content of lectures can therefore vary between course dates.

Project

Great emphasis is put on the student's project, a study of advanced materials, is carried out individually or in small groups. The study requires that the students perform a thorough information search and/or calculations or experiments. The focus is on a group of materials in the technological application or scientific frontline. A theme is to be treated in a broad sense only to be narrowed down to a particular materials engineering application or area of potential use. A current theme will be announced at each course date together with project instructions.

Reading List

See separate document.

Examination

Assessment is based on a written exam on the lectures, and on the written and orally presented project report, individually or in groups.

Grades

One of the grades Fail (U), 3 (Pass), 4 (Not without Distinction) or 5 (Pass with Distinction) is awarded in the examination of the course.

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course assessment is based on student views and experiences as reported in written course evaluations and/or group discussions. Students will be informed of the result of the evaluation and of the measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional Information

Students who enrolled before 1 July 2007 will complete their studies in accordance with the requirements of the earlier admission. Upon completion students may request degree and course certificates to be issued under the current ordinance if they meet its requirements.

The local regulations for studies at the Bachelor's and Master's levels at Karlstad University stipulate the obligations and rights of students and staff.

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