



MH2032 Mechanical Properties of Materials 6.0 credits

Materials mekaniska egenskaper

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

Establishment

Course syllabus for MH2032 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

MH2038 Micro and Nano Structures in Materials 6.0 credits or similar

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, a student should be able to:

- Explain the principles of deformation of metals.
- Explain creep and the principles of fracture in metals, recognizing typical fracture surfaces.
- Apply appropriate models for describing mechanical properties.
- Value the importance of mechanical properties.

The purpose of the course is that:

The students should process information about mechanical properties so it can be valued, applied and criticized. The students should be able to work in metal producing, or metal using industry where mechanical properties are of high value. They should also be able to study the subject further by courses, books of research articles.

Course contents

The course relates the mechanical properties of metals to their microstructure, explaining the development and evolution of deformation microstructures. The course has a theoretical part where plastic deformation, from continuum- and crystal plasticity perspectives, is followed by dislocation theory and hardening mechanisms. Then an applied part follows where static cracks, tough- and brittle fracture, fatigue, creep and strain ageing are considered. The course has also a modelling part where models are applied to experimental information.

Examination

- TENA - Written exam, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- SEM1 - Seminar, 2.0 credits, grading scale: P, F
- INLA - Assignment, 0 credits, grading scale: P, F
- KON1 - Partial exam, 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.

If the course is discontinued, students may request to be examined during the following two academic years.

Students who have not completed a course with a previous set of examination parts are examined at TEN1 and SEM1.

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.