



# KF2110 Mechanical Properties of Materials 7.5 credits

Materials mekaniska egenskaper

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

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

## Establishment

Course syllabus for KF2110 valid from Autumn 2007

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Chemical Science and Engineering, Chemistry and Chemical Engineering

## Specific prerequisites

Knowledge in chemistry, mathematics and physics acquired in earlier years in chemical engineering.

## Language of instruction

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

## Intended learning outcomes

After the course the student should be able to:

- Understand and apply the stress and strain concepts
- Know the importance of constitutive equations and constitutive parameters and know these are determined experimentally and which types of constitutive expressions are applied on different material classes
- Explain the relation between atomic structure and Young's modulus and fracture toughness

Understand and apply statistical mechanical rubber elasticity theory

## Course contents

Basic continuum mechanics, constitutive relationships for different material classes (elastic, viscoelastic and viscous materials), time- and temperature dependence of viscoelastic materials, fracture mechanics, modern construction- and design facilities, molecular aspects on mechanical properties of materials (enthalpy and entropy elasticity, viscoelasticity).

## Course literature

Compendium

## Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- TEN1 - Written exam, 6.0 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.

## Other requirements for final grade

Written examination (TEN1: 6 cr)

Laboratory work (LAB1; 1,5 cr)

## 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.