KF2250 Mechanical Properties of Materials 7.5 credits

Materialens mekaniska egenskaper

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

Establishment

Course syllabus for KF2250 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Specific prerequisites

At least 150 credits from grades 1, 2 and 3 of which at least 110 credits from years 1 and 2, and bachelor's work must be completed, within a programme that includes:
75 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics and 6 university credits (hp) in computer science or corresponding.

Language of instruction

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

Intended learning outcomes

After finished course the student should have knowledge about:

-how different material parameters and external factors affect the mechanical properties

-which test methods are suitable for measurement of mechanical properties

-difference in influence of static and dynamic stress

-fundamental differences and likenesses between mechanical properties of organic and inorganic materials at small deformations, plastic deformation and deformation to fracture

-influence of time and temperature, “time-temperature equivalence”

Course contents

Mechanical properties of inorganic materials (metals, cerams) and organic materials (polymers, fibres) and composites (material blends, nanocomposites, filled and reinforced systems).

Mechanical testing, enthalpy elasticity, rubber elasticity, viscoelasticity, plasticity, viscoplasticity, fracture properties, deformation velocity and temperature influence. Molecular and morphological influence on the mechanical properties. External influence including moisture, solvents and oxidation.

The course has the goal to cover “all cathegories” of materials as concerns mechanical properties. Also “all” types of mechanical influence will be elucidated.

Examination

- PRO1 - Project Work, 2.0 credits, grading scale: P, F
- TEN2 - Examination, 5.5 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.

Other requirements for final grade

Examination (TEN2; 5.5 credits)
Project work (PRO1; 2.0 credits)

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.