SG2122 Continuum Mechanics 6.0 credits

Kontinuummekanik

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 valid from Fall 2022

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

English B / English 6

Mechanics and mathematics of the first and second year. A course in one of the following: analytical mechanics, solid mechanics, or fluid mechanics, is desirable but not mandatory.

Language of instruction

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

Intended learning outcomes

To give a common ground for the mechanics of fluids and solids and the connection of these to applications.

Course contents

Tensors in Cartesian and other orthogonal coordinates. Infinitesimal and finite deformation. Hamilton's principle. Linearly elastic materials. The dynamics of beams as application of Hamilton's principle. Elastic (ideal) fluids; linear and non-linear sound waves. Finite elasticity. Dissipative materials (linearly irreversible theory); conservation of energy, entropy inequality. Newtonian fluids.

Examination

- INL1 - Hand in Task, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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.

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.