



# SE1020 Solid Mechanics, Basic Course 9.0 credits

Hållfasthetslära, grundkurs

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

The course syllabus is valid from Fall 2023 according to the school principal's decision: S-2023-0747 Decision date: 2023-05-26

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

CMATD: SG1120 Mechanics I

CDEPR: SG1130 Mechanics I

Other program: the equivalent courses

# Language of instruction

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

# Intended learning outcomes

In design and development of advanced products and process, it is important to assure the functionality. All products and processes are required to have the correct stiffness and not to break under service. In this course, you will learn about the mechanical properties of materials and components and how this knowledge is used to design products and processes with respect to stiffness and strength. Knowledge in strength of materials and solid mechanics design will make product development much more efficient since you will be able to answer question such as "Does it break?" or "Will there be too much deformations?" even before the prototypes has been built.

After the course, the participant should be able to

- determine stresses and deformations in truss structures, frames and composites using models for rods and beams
- determine stresses and deformations in axisymmetric structures.
- determine the loading applied on a crack.
- design the structures mentioned above from knowledge of the applied loading and the mechanical behaviour of the material.
- determine the applicability of the models above and also understand the order of the approximations included in the models.

# Course contents

To acquire knowledge about the basic principles and terminology of solid mechanics, mechanical behaviour of engineering materials, methods to solve important types of solid mechanics problems and ability to apply this knowledge for solution of simple problems of practical importance.

# Examination

- KON2 - Partial exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, - credits, grading scale: P, F
- TEN2 - Written exam, 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.

# Transitional regulations

The new examination modules KON2 and TEN2 together correspond to the previous examination modules DIA1 and TEN1.

Students who previously had the module DIA1 reported will be reported on TEN1 (6 credits) according to the old version when the two modules KON2 (4.5 credits) and TEN2 (4.5 credits) according to the new version are approved.

## **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.