SE1010 Solid Mechanics, Basic Course with Project 12.0 credits

Hållfasthetslära, grundkurs med projekt

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

Establishment

Course syllabus for SE1010 valid from Autumn 2016

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

CMAST: SG1130 Mechanics I
CFATE: SG1132 Mechanics I Inclusive Project
or the equivalent

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 structure
- determine the loading applied on a crack
- design 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
- present, within the framework of a project work, the solution to a problem in solid mechanics summarized in a written report.

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

Course literature

H. Lundh, Grundläggande Hållfasthetslära, KTH, Hållfasthetslära , 2013
Exempelsamling i hållfasthetslära, KTH, Hållfasthetslära, 2014
Handbok och formelsamling i hållfasthetslära, KTH, Hållfasthetslära, 2014

Examination

- PRO1 - Project, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 6.0 credits, grading scale: A, B, C, D, E, FX, F
- DIA1 - Diagnostic Task, 3.0 credits, grading scale: P, F
- LAB1 - Laboratory Work, 0.0 credits, grading scale: P, 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

Written exam (TEN1; 6 university credits)
Diagnostic task (DIA1; 3 university credits)
Laboratory (LAB1; 0 university credits)
Project task (PRO1; 3 university 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.