ML1214 Solid Mechanics, Advanced Course 7.5 credits

Hållfasthetslära, fortsättningskurs

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

Establishment

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Completed courses: ML1201 and ML1000 and approved module TEN2 in ML1101

Language of instruction

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

Intended learning outcomes

On completion of the course, the student should be able to:

- calculate stress and deformation conditions in complex structures (simplified statically indeterminate constructions), outgoing from models for slim structures
- choosing geometry and dimension from previously mentioned types of structures, with regards to criteria like deformation, plasticizing and tensile strength
- define boundary conditions
- decide the used models applicability as well as executing plausibility assessment of made approximations and acquired results
- solve problems with methods for fatigue and fracture mechanics

Course contents

- Multidimensional stress and deformation analysis
- Equivalent stress
- Hooke’s generalized law
- Statically indeterminate systems and truss
- Thin-walled pressure vessels
- Statically indeterminate beams
- Superposition of beam bending formulas
- Formulation of boundary values
- Stress and deformation conditions in symmetric axial structures (axles, tubes, pressure vessels)
- Fatigue, introduction to fracture mechanics

Examination

- ÖVN1 - Exercises, 2.5 credits, grading scale: P, F
- TEN1 - Written examination, 5.0 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.

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

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.