ML1214 Solid Mechanics, Advanced Course 7.5 credits

Hållfasthetslära, fortsättningskurs

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 for ML1214 valid from Autumn 2017

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

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 states in composite structures (trusses and simple frameworks) based on models of slender structures, rods, beams, rivets and cylindrical axles
- calculate stress and deformation states for axisymmetric structures (axles, pipes, pressure vessels)
- choose geometry and dimension for above-mentioned types of structures regarding deformation, plastication, ultimate strength, buckling and lifelength (at repeated load).
- define boundary conditions for an FE (Finite Element) analysis
- judge the applicability of the used models and carry out a plausibility assessment for approximations
- decide where concentrations of stress appear and when a fracture-mechanical analysis is necessary

Course contents

- Multidimensional stress and deformation analysis
- Equivalent stress
- Hooke's generalised law
- Statically undetermined systems and frameworks
- Fatigue, introduction to fracture mechanics
- Finite Element Methods
- Formulation of boundary values

Disposition

Lectures

Course literature

Statics and Mechanics of Materials, 4rd Edition
in SI Units. Hibbeler & Cheong. Prentice Hall,
Pearson Education, Singapore, 2014. ISBN 9789314526043.

Handbok och formelsamling i hållfasthetslära, KTH, Institutionen för Hållfasthetslära.

Examination

- TEN1 - Written examination, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises, 2.5 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.

Other requirements for final grade

Approved written examination
Approved exercises

Final grades A-F

The final grade is based on criteria for the course elements.

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.