



SG1117 Engineering Mechanics

7.5 credits

Teknisk mekanik

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

Establishment

Course syllabus for SG1117 valid from Spring 2020

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Active participation in SF1625 Single variable analysis.

Language of instruction

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

Intended learning outcomes

After completing the course the student should:

- be able to read and apply mathematical text applied in the field of mechanics, and communicate reasoning and calculations in this area in such a way that they are easy to follow

in order to use the course content concept and theory to solve basic problems where the parts of the course are used individually.

For higher grades, the student must be able to:

- identify a concrete mechanical problem, and choose suitable mechanical models based on a problem description where several of the course parts must be combined,
- formulate the mechanical models mathematically, treat the problem and critically analyze the significance of the result.

Course contents

Theory, conceptual reasoning and problem solving in the areas below.

Vector algebra and dimension views.

Power and torque.

Power systems, power pairs, connections, reduction results.

Mass system for particle systems, rigid bodies and composite bodies.

Static equilibrium: equilibrium conditions in 2 and 3 dimensions, ropes and pulleys, friction.

Particle kinematics: coordinate system, component forms, kinematic conditions.

The momentum law, Newton's laws in different coordinate systems.

Work, power and energy, conservative systems, energy equation, dissipative systems.

Moment equation, rotational motion, mass inertia.

Impulse and shock.

Oscillations: free and forced, damped and undamped.

Conceptual reasoning and problem solving in the above areas.

Course literature

Uppgift om kurslitteratur meddelas i kurs-PM.

Examination

- INLA - Exercises, 3.0 credits, grading scale: P, F
- TENA - 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.

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

The examiner, in consultation with the KTH coordinator for disability (Funka), decides on any adapted examination for students with documented, permanent disability. The examiner may allow another examination form when re-examining individual students.

Other requirements for final grade

Assignments (INLA; 3 credits), a written exam (TENA; 4.5 credits). For grade E, the exam can be passed in the form of partial tests.

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.