



SG1102 Mechanics, Smaller Course 6.0 credits

Mekanik, mindre kurs

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 SG1102 valid from Spring 2020

Grading scale

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

Education cycle

First cycle

Main field of study

Mechanical Engineering, Technology

Specific prerequisites

Active participation in SF1626 Single variable analysis or SF1673 Analysis in one variable.

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 understand mathematical text applied in the field of mechanics and communicate reasoning and calculations in this field orally and written in such a way that they are easy to follow,
- identify a concrete mechanical problem, and choose suitable mechanical models based on a problem description,
- translate the mechanical model into a mathematical model,
- mathematically treat the problem and critically analyze the significance of the result,

in order to use a physical mindset and communicate this within the framework of engineering science contexts.

Course contents

Statics: Quantities, units, dimensions, dimension analysis, vector algebra and vector geometry, force, momentum, force system, force pair, reduction result, equilibrium, uncovering, necessary equilibrium conditions.

Particle dynamics: Particle kinematics, in Cartesian coordinates, cylinder coordinates, natural components. Inertial systems, forces and Newton's laws. Work, power, energy, conservative forces, kinetic and potential energy. Movement torque, moment equation; The impulse laws, impact, the impact pulse law.

Linear oscillations in one dimension: free undamped and damped oscillation.

Course literature

Nicholas Apazidis, Mekanik I: Statik och Partikeldynamik, Studentlitteratur, Lund.

Examination

- INL1 - Hand in Task, 1.5 credits, grading scale: P, F
- TENB - Examination, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- TENC - Examination, 3.0 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.

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 (INL1; 1.5 credits)

Written examination (TEN; 3 credits), the theoretical part of the exam (1.5 credits) can be passed on 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.