# SG1109 Mechanics 8.0 credits

**Mekanik**

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

## Establishment

Course syllabus for SG1109 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 understand mathematical text applied in the field of mechanics and communicate reasoning and calculations in this field orally and in writing in such a way that they are easy to follow
- report derivations of the course's central relationship
- 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**: Magnitudes, units and dimensions, vector algebra and vector geometry, force geometry incl. resultant, power pairs, etc. Necessary equilibrium conditions, average methods, potential conditions, mass centers.

**Particle dynamics**: Particle kinematics, in Cartesian coordinates, cylinder coordinates, natural components. Inertial systems, forces and Newton's laws. Work, effect, energy, conservative forces, kinetic and potential energy. Central Movement. Linear oscillations in one dimension: harmonic, subdued and forced.

**Particle system**: The basic momentum laws.

## Course literature

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

## Examination

- INL1 - Assignments, 1.0 credits, grading scale: P, F
- TEN2 - Problem Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Theory Examination, 4.0 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.

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 credit)

Two written exams:

- Theory part (TEN1; 4 credits) can also be examined as KON.
- Problem solving part (TEN2; 3 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.