ML1101 Mechanics, General Course 7.5 credits

Mekanik, allmän 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 ML1101 valid from Spring 2020

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Approved module TENA in ML1000 or equivalent

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:

- based on a concrete mechanical problem, make idealizations and, with motivations, set up a mathematical model with an analysis
- interpret and assess the plausibility of the results
- use basic concepts in mechanics, such as speed, acceleration, mass, time, force and torque, and the relations between them
- set up and solve force and torque equations, for static problems, limited to an inertial reference frame
- calculate forces and equilibrium position for a mechanical system at rest
- set up and solve force and torque equations, for dynamic problems, limited to an inertial reference frame

Course contents

- Quantity, units and dimensions
- Free body diagram
- Force and torque systems
- Equilibrium for particles and rigid bodies
- Basic machines
- Kinematic relations
- Particle kinetics in Cartesian coordinates and natural components
- Friction – flat surfaces and belt friction
- Translational motion. Moment of inertia. Steiner's theorem
- Bearing reactions
- Energy, work, effect and efficiency
- Critical oscillations and damping ratio
- Problem solving including interpretation and assessment of plausibility

Examination

- TEN1 - Written examination, 3.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN2 - Written 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.

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.