



# SK1151 Elementary Physics 9.0 credits

## Grundläggande fysik

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

The Head of School at the SCI School has decided on April 4, 21, to set this syllabus to apply as of HT2020, file number: S-2020-0286.

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

Basic and specific requirements for engineering program.

## 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:

- solve technical problems relevant to its program which include mechanical forces and energy relations, electric and magnetic fields, mechanical and electromagnetic waves, and assess the reasonableness of the solution.
- use physical measurement methods and instruments and report results and evaluate limitations.

## Course contents

- **Mechanics:** Vectors, forces, inertial systems, Newton's laws, work, power, energy, circular motion, center of mass, inertia, particle systems and CG motion, linear fluctuations, harmonics, damped oscillations.
- **Waves:** harmonic and spherical waves, wave propagation, mechanical waves, intensity, reflection, standing waves. Electromagnetic waves, polarization, interference, diffraction, lasers, basic geometrical optics.
- **Electrostatics (electric and magnetic properties):** Electrical power, field strength and potential, Gauss's theorem, electric field and electric potential in metals and dielectrics, the principle of the capacitor, electrostatic energy. Magnetic force, magnetic materials, magnetic energy. Electromagnetic induction.

## Examination

- INL1 - Written assignments, 1.5 credits, grading scale: P, F
- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- TENE - Examination Electromagnetics, 2.0 credits, grading scale: P, F
- TENM - Examination Mechanics, 2.0 credits, grading scale: P, F
- TENV - Examination Waves, 2.0 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.

The course grade will be established from the combined results of TENE, TENM, and TENV.

## Other requirements for final grade

Pass grades in all parts

## 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.