



# SI1142 Mathematical Methods in Physics, Additional Course 3.0 credits

Fysikens matematiska metoder, tilläggskurs

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

## Establishment

The course plan applies from and including HT 2023 according to school head decision:  
S-2023-0376 Decision date: 2023-03-12

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Physics, Technology

## Specific prerequisites

## 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 a student should be able to:

- Use tensor analysis in order to describe and analyze physical relationships
- Use Lagrange's and Hamilton's formalisms in classical mechanics in order to reach conclusions regarding different physical systems and how they behave
- Within Lagrange's and Hamilton's formalisms, account for how constants of motion appear and apply these to the analysis of physical systems

## Course contents

Tensor and vector analysis in general spaces. Tangent and dual vectors. The metric tensor. Lagrange's and Hamilton's formulations of classical mechanics. Noether's theorem. Constants of motion.

## Examination

- TEN2 - 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.

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

## Other requirements for final grade

Pass final examination.

## 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.