# SI1146 Vector Analysis 4.0 credits

**Vektoranalys**

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

## Establishment

The course syllabus is valid from Autumn 2022 according to the school principal's decision: S-2022-0950. Decision date: 2022-05-20

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

Completed course:

- SF1674 Multivariable analysis

## 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, a student should be able to

- Use vector calculus to describe and analyse physical systems
- Be able to model and formulate basic physical problems within for example electromagnetism and fluid mechanics by means of vector calculus
- Describe different physical situations where singular vector fields arise and use these to describe physical systems
- Apply tensor analysis on basic physical problems within for example solid mechanics
- Use symmetries and basic group theory to draw conclusions about physical systems

## Course contents

Concept within vector calculus and their physical applications: the nabla operator, integral theorems and potential theory. Tensors with applications from for example electrodynamics and continuum mechanics. Special vector fields and their importance within physical modelling. Modelling by means of vector calculus. The concept of symmetry with relation to basic group theory and its importance within physics.

## Examination

- TEN1 - 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.

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

## Other requirements for final grade

Approved 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.