



# SF1678 Groups and Rings 7.5 credits

## Grupper och ringar

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

## Establishment

Course syllabus for SF1678 valid from Autumn 2019

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

Completed basic course SF1672 Linear Algebra or SF1624 Algebra and Geometry.

## 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 concepts, theorems and methods to solve, and present the solution of, problems in those parts of group and ring theory described by the main contents of the course,
- read and understand mathematical text,

in order to

- be able to carry out abstract reasoning about algebraic structures
- be trained in logical thinking and in constructions of mathematical proofs
- be able to recognize and use algebraic structures in engineering and science subjects and in his or her forthcoming work.

## Course contents

Group theory: groups, permutations, homomorphisms, group actions, Lagrange's theorem, Sylow's theorems, structure of abelian groups.

Ring theory: rings, ideals, fields and field extensions, factorization, principal ideal domains, polynomial rings, rings of integers.

## Course literature

Announced no later than 4 weeks before the start of the course on the course web page.

## Examination

- TEN1 - Exam, 7.5 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 decides, in consultation with KTHs Coordinator of students with disabilities (Funka), about any customized examination for students with documented, lasting disability. The examiner may allow another form of examination for re-examination of 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.