



# SF1643 Numbers and Functions

## 4.0 credits

### Tal och funktioner

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 SF1643 valid from Autumn 2008

### Grading scale

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

### Education cycle

First cycle

### Main field of study

Mathematics, Technology

### Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

### Intended learning outcomes

Having completed the course, you will be able to:

- Simplify expressions with the help of factorization, laws of exponents and logarithms;
- Derive trigonometric relations with the help of the unit circle;
- Use factorization and polynomial division algorithm in order to solve certain polynomial equations;
- Solve certain trigonometric equations, equations including square root, logarithm or absolute value of an expression;
- Use Sigma-notation for a sum, and apply the binomial theorem.
- Carry out certain simple proofs, e.g., by induction.
- Make computations with complex numbers, both in rectangular and polar form;
- use the complex exponential function.
- Discuss the properties of certain elementary functions, in particular, logarithmic and trigonometric functions and their inverses.
- Present your arguments and calculations in an easy to follow way.

## Course contents

- Computation involving real and complex numbers, inequalities, equation solving.
- Basic properties of elementary functions such as natural logarithm, power and exponential functions, trigonometric functions, complex exponential function. Inverse functions.
- Induction and binomial theorem. Sums and Sigma-notation.

## Specific prerequisites

Advanced mathematics (level A-D from a Swedish high school) or equivalent.

## Examination

- TEN1 - 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.

## Other requirements for final grade

The examination of the course is by a finishing written exam and some smaller written test and projects during the course. The tests and projects give credits for the final exam.

## 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.