SF1695 Basic course in Mathematics 7.5 credits

Baskurs i matematik

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

Establishment

Grading scale

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

Education cycle

First cycle

Main field of study

Mathematics, Technology

Specific prerequisites

Basic requirements. (Matematik 3C passed.)

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 shoule be able to:

- Use concepts, theorems and methods to solve, and present solutions to, problems within the parts of the basic mathematics described by the course contents.

- Use programming to solve problems within the parts of the basic mathematics and its applications described by the course contents.

- Read and comprehend mathematical text.

with the purpose to:

- Develop a good understanding of basic mathematics as a ground for the continued studies in mathematics as well as for being able to use it to mathematically model certain applied problems.

- Develop a skill in using programming in order to solve some applied problems as well as to visualize and present the results in a clear manner.

Course contents

Basic concepts from logic and set theory. Different forms of proof. Arithmetics for rational and real numbers. Permutations and combinations. The binomial theorem. Factorization of polynomials, polynomial division, completing the square. The concept of a function. Elementary functions: polynomials, rational functions, exponential functions, logarithms, trigonometric functions and their inverses. Sketching graphs by hand. Compositions and inverses of functions. Laws of exponents and logarithms. Trigonometric formulas. Simpler equations involving elementary functions, in particular, polynomial equations, trigonometric equations, equations involving radicals, logarithms and absolute values. Simpler inequalities. Equations for the line, circle, ellipse, hyperbola, and parabola. Complex numbers: standard form and polar form, complex exponential function. Introduction to the use of computer-based mathematical tools for calculation and visualization.

Examination

- DAT1 - Computer laboration, 1.5 credits, grading scale: P, F
- TEN1 - Exam, 6.0 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.

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Other requirements for final grade

Written examination, possibly with the option of continuous assessment.

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.