SF1610 Discrete Mathematics 7.5 credits

Diskret matematik

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

Establishment

The official course syllabus is valid from the spring semester 2027 as decided by the Faculty Board: PA-2025-0019. Date of decision: 2025-09-25

Grading scale

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

Education cycle

First cycle

Main field of study

Mathematics, Technology

Specific prerequisites

Active participation in SF1624 Algebra and Geometry or SF1684 Algebra and Geometry.

Intended learning outcomes

After the course the student should be able to

- use concepts. theorems and methods to solve and present solutions to problems within the parts of discrete mathematics described by the course content,

- read and comprehend mathematical text.

Course contents

The fundamental theorem of arithmetics, the Euclidian algorithm and a Diophantine equation. Modular arithmetics, Fermat's theorem and RSA. Sets, functions, relations, infinite sets and cardinal numbers. Proof by induction and recursions. Elementary group theory as the theorem of Lagrange and in particular the symmetrical group. Boolean algebra. Error correcting codes and in particular Hamming codes. Combinatorics, permutations, combinations, binomial and multinomial numbers, Stirling numbers, the sieve principle. Elementary graph theory, Eulerian and Hamiltonian graphs, matchings in bipartite graphs, planar graphs.

Examination

- TEN1 - Examination, 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.