SF1662 Discrete Mathematics 7.5 credits

Diskret 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

Technology

Specific prerequisites

Basic requirements.

Intended learning outcomes

Efter the course the student is expected to be able

- Apply definitions, theorems and methods, to solve, och present solutions to, problems within areas of Discrete Mathematics that are part of the course content.
- To read and understand mathematical texts.

Course contents

- The Euclidian algorithm and Diophantine equations. The Euclidean algorithm for polynomials and Gaussian integers. The Fundamental theorem of arithmetic. Modular arithmetic. Fermat's theorem and RSA.

- Recursion and proof by induction. Sets, functions, infinite sets and cardinal numbers. Elementary boolean algebra.

- Combinatorics and probabilities. The addition and multiplication principles, the pigeon-hole principle, binomial and multinomial numbers, Stirling numbers, the sieve principle.

- Elementary group theory, cyclic groups, subgroups and cosets, the theorem of Lagrange. Permutations, the symmetric group.

- Elementary graph theory, Eulerian and Hamiltonian graphs, trees, planar graphs, vertex colorings, matchings in bipartite 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.