

## as a gateway or proxy server.

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## Discrete Mathematics

Diskret matematik

6 credits

Programme course

TADI31

Valid from: 2022 Spring semester

<b>Determined by</b>	<b>Main field of study</b>	
Board of Studies for Computer Science and Media Technology	Mathematics, Applied Mathematics	
<b>Date determined</b>	<b>Course level</b>	<b>Progressive specialisation</b>
2021-09-01	First cycle	G1F
<b>Revised by</b>	<b>Disciplinary domain</b>	
	Natural sciences	
<b>Revision date</b>	<b>Subject group</b>	
	Mathematics	
<b>Offered first time</b>	<b>Offered for the last time</b>	
Spring semester 2018		
<b>Department</b>	<b>Replaced by</b>	
Matematiska institutionen		

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### Course offered for

- Bachelor of Science in Computer Engineering

### Intended learning outcomes

To give the basic knowledge of discrete mathematics that is needed for further courses in mathematics, natural and computer science. After completing the course the student should be able to

- use the Euclidean algorithm to solve Diophantine equations
- use the principle of mathematical induction to solve recursive problems
- understand and use the terminology and laws of set theory
- formulate and solve combinatorial problems on combinations and permutations
- master the foundations of graph theory and use graphs as a tool to model real-life problems
- use the language of propositional logic, be familiar to logic operations and be able to evaluate the validity of logical conclusions.

### Course content

Number theory; prime numbers, divisibility, Euclidean algorithm, Diophantine equations,

Mathematical induction and recursion.

Set theory, the laws of set theory and Venn diagrams.

Combinatorics with permutations and combinations.

Graphs: Euler paths, Hamilton cycles, trees and some applications in computer science

Logic; propositional logic, logic operations, truth tables and conclusions.

### Teaching and working methods

Teaching is done through lectures and problem sessions

### Examination

UPG1	Hand-in-assignment	2 credits	U, G
TEN1	A written examination	4 credits	U, 3, 4, 5

### Grades

Four-grade scale, LiU, U, 3, 4, 5

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## Other information

### About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is “Swedish”, the course as a whole could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is “English”, the course as a whole is taught in English. Examination language is English.
- If teaching language is “Swedish/English”, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English depending on teaching language.

### Other

The course is conducted in a manner where both men's and women's experience and knowledge are made visible and developed.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

If special circumstances prevail, the vice-chancellor may in a special decision specify the preconditions for temporary deviations from this course syllabus, and delegate the right to take such decisions.

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