



# KH0021 Mathematics for Technical Preparatory Year I 12.0 credits

## Matematik för basår I

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 KH0021 valid from Autumn 2020

## Grading scale

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

## Education cycle

Pre-university level

## Specific prerequisites

## Language of instruction

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

## Intended learning outcomes

# Course contents

## MODULE A: TENA

- Vectors; Arithmetical operations. Components of vectors. Coordinates. Vector length.
- Algebraic expression and algebraic methods; Implication and equivalence. Polynomial. Powers. Square roots. Absolute value. Equations. Factorial polynomials Rational expressions. Linear equation systems. Linear inequalities.
- Functions; Linear functions. Direct proportionality. Quadratic functions. Power functions.
- Right-angle trigonometry.
- Uniformity; Triangle theorems Area and volume scale factors.

## MODULE B: TENB

- Exponential functions.
- Logarithms; Logarithm laws. Natural logarithms.
- Derivatives; Change rates. Limits. The definition of the derivative. Derivation rules.
- Derivatives and graphs; Extreme points and extreme values. Increasing and decreasing. Maximum and minimum values. Second derivative.
- The equation of the circle.
- Area theorem. Sine law. Cosine law.

## Examination

- TENA - Written examination, 6.0 credits, grading scale: A, B, C, D, E, FX, F
- TENB - Written examination, 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.

## Other requirements for final grade

Final grades are based on the total number of points from both written examinations.

For final grade, it is required that all examination parts are approved

## 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.