KH0021 Mathematics for Technical Preparatory Year I 12.0 fup

Matematik för basår I

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

Establishment

Course syllabus for KH0021 valid from Autumn 2019

Grading scale

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

Education cycle

Pre-university level

Specific prerequisites

Completed upper secondary education including documented proficiency in Swedish corresponding to Swedish B, and English corresponding to English A. For students who received/will receive their final school grades after 31 December 2009, there is an additional entry for mathematics as follows:
documented proficiency in mathematics corresponding to Mathematics 2a,2b,2c, or Mathematics B with at least the grade Pass

Language of instruction

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

Intended learning outcomes

The overall goal of the course is to give new students enough skills and understanding to be able to follow the mathematics courses of the 3- and 5-year engineering programs.

The courses should also contribute to a good introduction to higher education.

The student should be able to formulate, analyse and solve mathematical problems in the area and to explain the mathematical reasoning in writing. The problems can be based on realistic situations and/or include handling of mathematical procedures of standard character.

Course contents

MODULE: 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 polynoms 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: 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.

Course literature

Matematik 5000, Kurs 3c Basår. ISBN 978-91-27-43010-5 (Förlag: Natur och Kultur)

Formler och tabeller. ISBN 978-91-27-42245-2 (Förlag: Natur och Kultur)

Examination

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

TENA - Examination, 6.0 credits. Grade scale A-F

TENB - Examination, 6.0 credits. Grade scale A-F

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.