



ML0012 Mathematics C 12.0 fup

Matematik C /Basårskurs/

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

Establishment

Course syllabus for ML0012 valid from Autumn 2013

Grading scale

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

Education cycle

Pre-university level

Specific prerequisites

Basic qualifications for university studies and Mathematics B from high school or equivalent.

Language of instruction

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

Intended learning outcomes

OVERALL GOALS

The student will be given a basic understanding of and skills in mathematics, needed to be able to understand the mathematics courses, as part of the college and engineering programs.

Part of course: Exam 1

The student will after the course to:

- deal with numerical calculations with real numbers, written in different ways
- manage formulas
- calculate the correct devices enter perimeter and area for a few simple areas and areas and volumes of some simple cells
- using key rates and know the concepts of classical geometry
- apply trigonometry in right triangles
- simplify and transform algebraic polynomial expressions
- solve equations of the first and second degree, linear inequalities, root equations and also polynomial equations of higher degree by factoring or by substitution
- simplify and use rational expressions and solve equations containing rational expressions
- interpret and use the powers and logarithms with real exponents, and master the relevant laws such as counting the solution of equations
- explain the characteristics of linear and some non-linear functions
- work with linear equations in different forms, solve systems of equations using algebraic methods, and interpret the solution from the graphical view
- determine the maximum and minimum points by using the symmetry of the quadratic function
- set up, interpret, and illustrate linear functions, power functions and exponential functions as models of real events in different areas
- use their skills in problem solving and in their study subjects

Part of course: Exam 2

The student will after the course to:

- explain, illustrate, use and interpret the concept of changing coefficients and derivatives of a function and use these to describe the characteristics of a function and its graph
- derive and use the rules of differentiation for some basic power functions, exponential functions and use the chain rule
- describe why and how the number e is introduced
- to draw conclusions about a function's derivative and estimate the value of the derivative when the function is given by its graph
- use the relationship between a function's graph and its derivatives in different application contexts
- use mathematical models of various kinds, including those based on arithmetic and geometrical progressions

Course contents

Part of course: Exam 1

- Numbers and numerical calculations, formulas, units.

- Plan and space geometry, trigonometry of right triangles.
- Algebra: Polynomials, rational expressions, solving equations, linear inequalities.
- Functions of: Linear functions, linear equations, polynomial functions, exponential and power functions, scientific notation and logarithms. Solving equations

Part of course: Exam 2

- Changes in speeds and derivatives, chain rule (introduction). Curves and derivatives, extreme values, maximum and minimum value.
- Arithmetical and geometrical sequences and sums

Course literature

**Natur o Kultur

**Ma4000 CD ISBN 978-91-27-41704-5

Formler och tabeller ISBN 978-91-27-72279-8

Konvergenta

Matematik-1000 övningsuppgifter i matematik på gymnasienivå kurs C, D och E. ISBN: 9197370800

Examination

- TEN2 - Examination, 6.0 fup, grading scale: A, B, C, D, E, FX, F
- TEN1 - 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.

When the written test is given bonus points can be counted, but only at the regular exam.

Other requirements for final grade

The final score is calculated as described in course-PM is based on all parts.

Written exam

Required reports, oral and / or in writing, of the selected data continuously during the course.

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.