



ML1000 Engineering Mathematics 11.0 credits

Matematik för ingenjörer

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 ML1000 valid from Autumn 2015

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

General and specific entry requirements for engineering programmes.

Language of instruction

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

Intended learning outcomes

After the course, the students should be able to:

- analyse the properties of elementary functions, their domains and ranges, and where appropriate decide their inverses.
- carry out calculations with complex numbers
- simplify expressions and solve equation by means of factorisation, power and logarithm laws and trigonometric relationships.
- define, interpret and apply the fundamental concepts of limit, continuity, derivative, integral, primitive function, infinite series, matrix, determinant, vector, inner product, cross product, triple product, straight line, plane.
- solve 1st and 2nd order ordinary differential equations of a simple type and solve elementary applications.
- communicate mathematical thoughts and follow and conduct mathematical reasoning, both orally and in writing

Course contents

- Calculations with real and complex numbers; absolute values; algebraic expressions; differences, and equation solution
- Sums and products
- Elementary functions: the natural logarithm function, exponential and power functions, trigonometric functions and the complex exponential function
- Inverse functions
- Differential and integral calculus in one variable with applications
- Simple ordinary differential equations
- Vectors and geometry in two and three dimensions. Matrices and determinants. Solution of linear equation systems

Disposition

Lectures Computer exercises

Course literature

Bok 1: Envariabelanalys, Lennerstad, Liber ISBN 9789147052912

Bok 2: Linjär algebra, Lemurell S, Studentlitteratur ISBN 9789144060545

Examination

- DÖV1 - Computer Exercises, 1.0 credits, grading scale: P, F

- TENA - Written Examination, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- TENB - Written Examination, 5.0 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.

TEN1, examination, Algebra and Geometry TEN2, examination, Calculus in one variable DÅ–VN, computer exercises Final grades are based on all parts

Activities that give bonus points are offered only for first-time registered students and students with individual study plan

Other requirements for final grade

Passed written examination Algebra and Geometry (TEN1; 5 cr) Passed written examination Calculus in one variable (TEN2; 5 cr) Approved computer exercises (DÅ–VN; 1 cr)

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.