ML0024 Mathematics for Technical Preparatory Year II 12.0 fup

Matematik för basår II

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

Establishment

Course syllabus for ML0024 valid from Spring 2017

Grading scale

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

Education cycle

Pre-university level

Specific prerequisites

The upper-secondary school from 1 July 2011 and adult education at upper-secondary level from 1 July 2012 (Gy2011):

- Mathematics 3b, 3c, Mathematics C or Mathematics I for Technical preparatory education.

Language of instruction

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

Intended learning outcomes

On completion of the course, the student should be able to:

- formulate, analyse and solve relevant mathematical problems and communicate in writing the mathematical reasoning. The problems can be based on realistic situations and/or include handling of mathematical procedures of standard character.

Course contents

Module A

- Trigonometry; the Unit circle. Trigonometric identities. Addition and the subtraction theorems Trigonometric equations. Trigonometric graphs. Radians. Derivatives of trigonometric functions.
- Proof techniques; Direct proofs. Indirect proofs.
- Derivatives; derivatives of composite functions. Product rule. Quotient rule. Relationships between change rates. Asymptots.
- Integral; Indefinite Integral. Definite Integral and Area.

Module B

- Number sequences; Recursion formulae. Arithmetic number sequence. Geometric number sequence.
- Complex numbers; Rectangular form. Complex conjugates. Absolute value. Arithmetic rules. The complex plane. Polar form. Exponential form. De Moivre's formula. Euler's formula.
- Polynomial equations; Polynomial long division. The factor theorem.
- Advanced studies of derivatives and integrals; Repetition of basic concepts. Linear approximation. Change rates. Extreme values. Integrals and area calculations. Partial integration. Solids of revolution
- Differential equations; differential equations of the first order. Inhomogeneous differential equations. Differential equations of the second order. Separable differential equations.

Disposition

- Lectures

Course literature

Meddelas senast 10 veckor före kursstart. Föregående läsår användes:

Natur o Kultur

- **Matematik 5000 Kurs 4**
  Alfredsson, Bråting, Erixon, Heikne 978-91- 27- 42632-0

- **Matematik 5000 Kurs 5**
  Alfredsson, Bråting, Erixon, Heikne 978-91- 27- 42633-7
- **Formler och tabeller** 978-91-27- 42245 -2

Extrabok som rekommenderas:

Konvergenta

- Matematik 1000 978-91- 973708-5-1

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.

Other requirements for final grade

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