HF1009 Introduction to Mathematics 1.5 credits

Introduktionskurs i matematik

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 HF1009 valid from Autumn 2018

Grading scale

P, F

Education cycle

First cycle

Main field of study

Mathematics,Technology

Specific prerequisites

Language of instruction

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

Intended learning outcomes

Upon completing this course students should be able to:

- Simplify algebraic expressions that include powers, logarithms and trigonometric functions.
- Solve linear, quadratic and equations with square roots.
- Solve systems of linear equations.
- Solve linear and nonlinear inequalities.
- Apply algorithm for polynomial long division and partial fraction method.
- Solve logarithmic, trigonometric and exponential equations.
- Calculate and apply derivatives.
- Apply the differentiation procedures to solve extreme value problems;
- Solve basic problems that include derivatives;
- Solve basic problems that include circles, ellipses, parabolas and hyperbolas.

Course contents

- Sets of Numbers: N, Z, Q, R, C. Symbols Σ, n! .
- Implication, Equivalence. Set operations A□ B, AUB, A \ B, AC
- Algebraic expressions
- Powers and roots
- Linear, quadratic and equations with square roots
- Systems of linear equations
- Linear and nonlinear inequalities.
- Exponential equations
- Logarithms and logarithmic equations
- Trigonometry
- Derivatives and extreme value problems. Convexity and concavity.
- Conic sections: circle, ellipse, parabola and hyperbola.

Course literature

MATEMATIK FÖR INGENJÖRER, Staffan Rodhe, Håkan Sollervall, Studentlitteratur. Upplaga 6 (ISBN13: 9789144067964)

Examination

- TEN1 - Examination, 1.5 credits, grading scale: P, 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.

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.