

SYLLABUS

Calculus 7.5 credits

M0029M

Differentialkalkyl

Course syllabus admitted: Autumn 2014 Sp 1 - Spring 2022 Sp 4

DECISION DATE
2014-02-14

Calculus 7.5 credits M0029M

Differentialkalkyl

First cycle, M0029M

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Matematik	Mathematics

Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language +

Mathematics E (specifik entry 9).

Or:

Mathematics 4 (specifik entry A9)

Selection

The selection is based on final school grades or Swedish Scholastic Aptitude Test.

Examiner

Mikael Stenlund

Course Aim

After completing the course, students should:

- Be able to demonstrate, articulate and use the binomial theorem and implement proof by induction.
- Use key concepts and methods in the calculus of one variable on extreme value calculations and graphing, proof of inequalities, limit calculations, analysis of functions and expressions, inverses, approximations of functions, etc..
- To prove the central theorems in the field of differential calculus in one variable.
- Be able to interpret the derivative as a rate and interpret the second derivative as acceleration and apply it to problems associated with speeds.
- Be able to manage and prove key properties of elementary functions and their inverses.
- Derive methods for numerical solution of equations in one variable.
- Demonstrate the ability to identify and solve problems using the methods taught in the course.

Contents

The binomial theorem, limits, continuous functions, differentiation, optimisation, polynomial approximation, numerical solution of equations.

Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Lectures, problem solving.

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.

Written examination.

Overlap

The course M0029M is equal to M0038M, M0047M, MAM281

Literature. Valid from Autumn 2009 Sp 1

Dunkels and others.: Mot bättre vetande i matematik, Studentlitteratur, latest edition.

Adams Robert A: Calculus, A Complete Course. Addison-Wesley, latest edition.

Dunkels and others: Derivator, integraler och sånt... Studentlitteratur, latest edition.

Course offered by

Department of Engineering Sciences and Mathematics

Items/credits

Number	Type	Credits	Grade
0001	Written exam	7.5	G U 3 4 5

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Mats Näsström 2014-02-14

Syllabus established

The syllabus is approved by the Department of Mathematics and is valid from August 2007.