

**SYLLABUS**

# **Basic Mathematics and Derivatives 7.5 credits M0050M**

**Matematiska grunder och derivator**

**Course syllabus admitted: Autumn 2023 Sp 1 - Present**

**DECISION DATE  
2022-02-14**

# Basic Mathematics and Derivatives 7.5 credits M0050M

## Matematiska grunder och derivator

### First cycle, M0050M

**Education level**  
First cycle

**Grade scale**  
G U 3 4 5

**Subject**  
Matematik

**Subject group (SCB)**  
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 + Swedish upper secondary school courses Physics 2, Chemistry 1, Mathematics 3c or Mathematics D.

## Selection

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

## Course Aim

After completing the course, the student will

- have knowledge of elementary functions and their properties
- know how to interpret the derivative and know the differentiation rules
- be able to work algebraically with expressions and derivatives
- be able to analyse properties of functions
- be able to model and solve applied optimisation problems
- be able to use mathematical software for the problem areas of the course
- be able to validate the plausibility of the results
- have insight into interpreting and validating the results from applied problems

## Contents

Basics. Equations. Functions. Limits, continuity, properties of continuous functions. Derivatives, differentials, extreme values, equation-solving, graphing. Applications. Use of computer tools.

## Realization

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

Lectures and tutorials where theory and example problems are reviewed, with some degree of personal practice.

Mandatory marking conferences for grading of the course assignments.

The assignments may be marked using other methods.

## 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. The course is graded with a written exam, and mandatory assignments. To pass the course, both parts need to be passed. The final grade of the course is set by the grade of the written exam.

## Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

## Overlap

The course M0050M is equal to M0038M

## Course offered by

Department of Engineering Sciences and Mathematics

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0002	Assignment report	U G#	1.5	Mandatory	A19	
0003	Written exam	G U 3 4 5	6	Mandatory	A21	

## 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 Niklas Lehto, Programme Director 2022-02-14

## Syllabus established

by Niklas Lehto 2019-02-15