



Faculty of Science

## MATC12, Mathematics: Ordinary Differential Equations 1, 7.5 credits

*Matematik: Ordinära differentialekvationer 1, 7,5 högskolepoäng*  
First Cycle / Grundnivå

---

### Details of approval

The syllabus is an old version, approved by Study programmes board, Faculty of Science on 2013-10-29 and was valid from 2013-10-29, spring semester 2014.

### General Information

The course is an elective course for first-cycle studies for a Bachelor of Science degree in mathematics.

*Language of instruction:* English

*Main field of studies*

Mathematics

Mathematics

*Depth of study relative to the degree requirements*

G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements

G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements

### Learning outcomes

The aim of the course is to enable students to acquire the following knowledge and skills on completion of the course.

*Knowledge and understanding*

On completion of the course, the student should:

- be familiar with basic concepts and methods within the theory of ordinary differential equations,
- have acquired basic knowledge for continued studies within the theory of ordinary differential equations.

### *Skills and abilities*

On completion of the course, the student should have developed the ability to communicate mathematics in speech and in writing.

### *Values and approach*

On completion of the course, the student should have a good knowledge of the theory of ordinary differential equations as a tool for other areas in mathematics.

## **Course content**

Some solution methods for first order equations. Linear equations of higher order with constant and variable coefficients. Power series solutions and Frobenius' method. Linear systems with constant and variable coefficients. Existence and uniqueness of solutions. Introduction to numerical methods for initial-value problems.

## **Course design**

The teaching consists of lectures, seminars and computer exercises. Compulsory written assignments occur during the course.

The examination consists of a written exam followed by an oral exam. The oral exam may only be taken by those students who pass on the written exam. Students who fail the regular examination are offered a resit examination shortly thereafter.

## **Assessment**

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## **Grades**

Marking scale: Fail, Pass, Pass with distinction.

The final grade is decided by combining the results of the oral and written exams, and the assignments.

## **Entry requirements**

For admission to the course, at least 60 credits in mathematics are required.

## **Further information**

The course may not be included in a degree together with MAT314 Ordinary Differential Equations, 5 credits, or MATM14 Ordinary Differential Equations, 7.5

credits.

## Subcourses in MATC12, Mathematics: Ordinary Differential Equations 1

Applies from H13

1301 Examination, 7,5 hp  
Grading scale: Fail, Pass, Pass with distinction