

# Mathematics 3C for Foundation Year

Academic preparatory

10 fup

Matematik 3C för basår

BMN301

Valid from: 2017 Spring semester

**Determined by**  
Övrigt

**Date determined**  
2017-01-25

## Main field of study

No main field of study

## Course level

Academic preparatory

## Course offered for

- Foundation Year in Science and Technology

## Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

## Prerequisites

See admission requirements for the Foundation Year at Linköpings universitet.

## Intended learning outcomes

The aim of the course is to provide a basic training in mathematics and prepare students for university studies in mathematics. Completion of this course qualifies the corresponding Mathematics 3C.

After the course students should be able to

- perform algebraic computations with real numbers
- solve equations, inequalities and systems of equations
- comprehend the concept of functions and conduct functional studies
- understand and apply the concept of derivative
- determine primitive functions and perform simple integral calculations with applications
- apply trigonometric relationships with the unit circle and use the theorems of triangle for an arbitrary triangle

## Course content

Number systems, coordinate systems in the plane, algebraic expressions and operations, equations, systems of linear equations and inequalities, root equations, equations of straight lines, parabolas and circles, polynomial, polynomial equations and factor theorem, plane and solid geometry, the concept of functions, polynomial, power and exponential functions, exponentiation and logarithms, limits, rate of change and the derivative, differentiation of polynomial, power and exponential functions with applications, tangent and normal equations, analysis of the fundamental functions, determining the extreme values and sketching graph of a function, the unit circle, trigonometric concepts and angles in right triangles, theorems of triangle, primitive functions and integrals with applications.

## Teaching and working methods

The course is given in the form of lectures and tutorials. Concepts and theories of mathematics are presented in the lectures. Students actively work under teacher's guidance in the tutorials.

The examination consists of a written examination (written examination) at the end and continuous assessment (assignments and written test) throughout the course.

## Examination

UPG1	Assignments	2 fup	U, G
KTR1	Written test	0 fup	U, G
TEN1	Written examination	8 fup	U, 3, 4, 5

## Grades

Four-grade scale, LiU, U, 3, 4, 5

## Other information

Supplementary courses: Mathematics 4 for Foundation Year.

## Department

Institutionen för teknik och naturvetenskap

## Director of Studies or equivalent

George Baravdish

## Examiner

Zhuangwei Liu

## Course website and other links

<http://www.itn.liu.se/~zhuli12/BMN301/index.html>

## Education components

Preliminary scheduled hours: 80 h

Recommended self-study hours: 187 h

## Course literature

Alfredsson m.fl., Matematik 5000 kurs 3c Basåret lärobok, Natur och Kultur, Stockholm. Kompletterande material.

## Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at [http://stydokument.liu.se/Regelsamling/Innehall/Utbildning\\_pa\\_grund-\\_och\\_avancerad\\_niva](http://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva).