

Foundation Course in Mathematics

Programme course

6 credits

Matematisk grundkurs

TATA84

Valid from: 2017 Spring semester

Determined by

Board of Studies for Industrial Engineering and Logistics

Date determined 2017-01-25

Offered for the last time Autumn semester 2019

Replaced by TATB03

Main field of study

Mathematics, Applied Mathematics

Course level

First cycle

Advancement level

G1X

Course offered for

- Asian Studies Chinese
- Asian Studies Japanese

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.

Intended learning outcomes

It is important that you acquire general mathematical accuracy and a stable foundation for your continued studies. After the course is completed you should be able to:

- read and comprehend mathematical texts.
- perform standard calculations with accuracy.
- handle calculations with algebraic expressions, inequalities and absolute values.
- solve polynomial equations and equations containing square roots.
- analyze how the concepts domain, range, injectivity and composition relate to particular functions.
- define and draw the graphs of the elementary functions: the natural logarithm, exponential-, power-, trigonometric- and inverse trigonometric functions.
- use and prove laws and formulas for the elementary functions.
- work with complex numbers in cartesian and polar form.
- define the complex exponential function and use and prove Euler's and deMoivre's formulas.
- solve problems concerning straight lines and circles in the plane.
- perform logical arguments
- work with geometric and arithmetic sums.
- check results and partial results in order to verify their correctness or reasonableness.



Course content

Algebraic expessions, inequalities, modulus, complex numbers. Solving equations. Functions and graphs. Definitions and properties of the elementary functions: natural logarithm, exponential function, power function, trigonometric functions and complex exponential function, arcus functions. The Euler formulas. Basic principles of logic. Different types of proof techniques. Coordinate systems in the plane. Polar coordinates. Lines and circles. The complex plane. Complex numbers in polar form. Inverse trigonometric functions.

Teaching and working methods

Problem classes, tutorials, and a few lectures.

Examination

UPG1	Hand-in assignments	1.5 credits	U, G
TEN3	Written examination	4.5 credits	U, 3, 4, 5
TEN2	Written examination	3 credits	U, 3, 4, 5
TEN1	Written examination	1.5 credits	U, 3, 4, 5

Grades

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

Department

Matematiska institutionen

Director of Studies or equivalent

Jesper Thorén

Examiner

Jonas Bergman Ärlebäck

Course website and other links

Education components

Preliminary scheduled hours: 78 h Recommended self-study hours: 82 h



Course literature

Additional literature

Books

G. Forsling, M. Neymark, Matematisk analys, en variabel Liber

Other

