



COURSE SYLLABUS

Basic Calculus, 7.5 credits

Grundläggande analys, 7,5 högskolepoäng

Course Code: TGAG19	Education Cycle: First-cycle level
Confirmed by: Dean Dec 4, 2018	Disciplinary domain: Natural sciences
Revised by: Director of Education Nov 5, 2021	Subject group: MA1
Valid From: Jan 1, 2022	Specialised in: G1N
Version: 3	

Intended Learning Outcomes (ILO)

After a successful course, the student shall

Knowledge and understanding

- display knowledge of the elementary functions and their basic properties

Skills and abilities

- demonstrate ability to read and interpret mathematical text on a basic level
- demonstrate skills of evaluating limits and using basic continuity theorems
- demonstrate skills of calculating derivatives and basic integrals involving elementary functions
- demonstrate ability to use limits and derivatives in order to analyze the properties of a given function and to methodically solve optimization problems
- demonstrate skills of evaluating generalized integrals
- demonstrate ability to solve basic differential equations of 1st and 2nd order

Contents

The course will include the basic theory of elementary functions, derivatives and integrals. It will also focus on mathematical reasoning, logic and problem solving in general with the aim to support the use of mathematics in an engineering context.

The course includes the following elements:

- Elementary function theory
- Limits and continuity
- Derivatives, differentiation rules, applications using the derivative to solve optimization problems
- Integrals, integration techniques, applications using integrals to solve geometrical problems
- Differential equations

Type of instruction

Lectures and tutorials.

The teaching is conducted in English.

Prerequisites

General entry requirements and Physics 1, Chemistry 1, Mathematics 3c or Physics A, Chemistry A, Mathematics D and English 6 or English B in the Swedish upper secondary school system or international equivalent (or the equivalent).

Examination and grades

The course is graded 5,4,3 or Fail.

Registration of examination:

Name of the Test	Value	Grading
Written exam	7.5 credits	5/4/3/U

Course literature

The literature list for the course will be provided 8 weeks before the course starts.

<https://openstax.org/subjects/math>

Parts of “Pre-calculus and “Calculus volume 1-3” will be used according to reading instructions.

Alternative literature:

Title: Calculus – A complete course

Author: Robert A. Adams

ISBN: 9780134154367