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
Valid From:	Jan 1, 2019	**Subject group:**	MA1
Version:	1	**Specialised in:**	G1N

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, Matematics 3c or Physics A, Chemistry A, Matematics 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 one month before the course starts.

Title: Calculus – A complete course
Author: Robert A. Adams
ISBN: 9780134154367

Alternative literature free of charge: https://openstax.org/subjects/math
Parts of “Pre-calculus and “Calculus volume 1-3” will be used according to reading instructions.