



COURSE SYLLABUS

Multivariable Calculus, 6 credits

Flervariabelanalys, 6 högskolepoäng

Course Code:	TFVK14	Education Cycle:	First-cycle level
Confirmed by:	Dean Apr 10, 2013	Disciplinary domain:	Natural sciences
Revised by:	Director of Education Nov 15, 2013	Subject group:	MA1
Valid From:	Aug 1, 2014	Specialised in:	G1F
Version:	2		
Reg number:	JTH 2013/499-122		

Intended Learning Outcomes (ILO)

Upon completion of the course, the student should

Knowledge and understanding

- be familiar with quadric curves and surfaces in canonic form
- understand the notions functions of several variables, limits, continuity, partial derivatives and the chain rule
- be familiar with vector fields as well as some basic differential operators as gradient, divergence and curl

Skills and abilities

- be able to find local and global extremes with and without constraints
- be able to compute double- and triple integrals
- be able to verify whether a field is conservative and find/use potentials
- be able to compute line- and flux integrals both directly or using known integral theorems

Contents

The course focuses on the basic theory of functions of several variables. It introduces the basic notions and techniques in the differential and integral calculus in two and three space dimensions. Some applications in geometry and physics are also given.

The course includes the following topics:

- Functions of several variables, domains, graphs and level curves/surfaces
- Limits and continuity
- Partial derivatives, directional derivatives, differentiability and tangent planes, the chain rule
- Local and global extremes; optimization under constraints
- Double and triple integrals, Fubini's theorem and change of variables
- Basics about vector fields; conservative fields and their potentials
- Line- and flux integrals, Greens and Gauss divergence theorems

Type of instruction

Lectures and seminars.

The teaching is conducted in English.

Prerequisites

General entry requirements and completed course Single Variable Calculus, 6 credits (or the equivalent).

Examination and grades

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

Registration of examination:

Name of the Test	Value	Grading
Examination	6 credits	5/4/3/U

Course literature

Literature

It the teaching is conducted in English, the literature is

Title: Multivariable Calculus

Author: Briggs/Cochran

Publisher:

ISBN: 9780321664150

It the teaching is conducted in Swedish, the literature are

Title: Analys i flera variabler 3:e uppl

Author: Persson, Böiers

Publisher:

ISBN: 9789144038698

Title: Övningar i Analys i flera variabler 8:e uppl

Author:

Publisher:

ISBN: 9789144048819