



HÖGSKOLAN I GÄVLE

Complex Analysis 7.5 cr

Komplex Analys 7,5 hp

Set by Faculty of Engineering and Sustainable Development

Version

Set at

Valid from

4/20/10

VT2010

Level	G1F
Education level	First cycle
Course identifier	MA205C
Credits	7.5 cr
Main field of study	Mathematics
Subject group	Mathematics
Disciplinary domain	Natural sciences 100.0 %

Learning outcomes

On completion of the course, the student should be able to:

1. account for basic concepts and prove theorems in holomorphic functions and complex analysis
2. demonstrate skills in using theorems and solving mathematical problems in complex analysis

Course content

Complex numbers and their properties. Holomorphic functions, Cauchy-Riemann equations, harmonic functions. The elementary functions. Contour integration: Cauchy's integral theorem and integral formula. Series representation of holomorphic functions: Power series, Taylor series, Taylor's theorem, Laurent series, zeros and singularities. Analytic continuation. Residue theory: The residue theorem, calculation of real integrals with residue calculus, the argument principle and Rouché's theorem. Conformal mapping: Möbius transformation.

Teaching

The teaching is given as lectures and calculation exercises. On the distance course, supervision and reading instructions are provided electronically.

Prerequisites

Multivariate Calculus, 7.5 HE credits or equivalent.

Examination

Written Examination or Written Assignments, 7.5 HE credits

Grade	A, B, C, D, E, Fx, F		
Sustainable environment	Content with sustainable development is not relevant to this course.		
Module	0010 Written examination	7.5 cr	Grade: AF