Complex Analysis

Registration Code	0061531	**Credits**	2.0
Course Category	Sciences Basic		
Term (Semester) / Day / Period	G-III (2nd year, Fall Semester) / Mon. / 5 (16:30～18:00)		
Instructor	DARPOE Erik Olof		
Target Schools (Programs)	Sc(P・C・B)・En(C・Au)・Ag(B)		

●Goals and Objectives of the Course
To introduce the basic theory of analytic functions in a single complex variable.

●Course Prerequisites
A good command of calculus in one and several variables, as well as basic linear algebra, is indispensible to understand the content of this course. Prior knowledge of complex numbers will be helpful, but is not necessary.

●Course Contents/Plan
Complex numbers: *The complex number system, properties of the complex numbers, Cartesian and polar form.*
The aim of this part is to get familiar with the complex number system.
Analytic functions: *Elementary functions, continuity, analytic functions, the Cauchy–Riemann equations, derivatives of analytic functions.*
The aim of this part is to get familiar with the concept of differentiability for complex functions. We will emphasize the link with functions from the real plane to itself.
Integrals: *Line integrals, Cauchy's theorem, Cauchy's integral formula.*
Complex line integrals have the noticeable property to be (under certain conditions) independent of the choice of the line between the end points. We will focus on the study of this behaviour.
Residues: *Power series and Laurent series, calculus of residues.*
Residue calculus is a powerful tool to evaluate in integrals along curves in the complex plane. We will study the underlying theory as well as applications.

●Course Evaluation Methods
Homework assignments and written examination.

Course withdrawal: Any student who does not participate in the final exam will receive the grade "Absent". It is not necessary to submit a course withdrawal request form.

●Notice for Students

Textbook	None
Reference Book	1. Marsden, Jerrold E.; Hoffman, Michael J.: Basic complex analysis. Third edition. *W. H. Freeman and Company, New York,* 1999. 2. Freitag, Busam: Complex analysis. Second edition. Universitext. *Springer-Verlag, Berlin,* 2009.
Reference website	
Message	