

King Fahd University of Petroleum and Minerals

Department of Mathematics and Statistics

SYLLABUS

Semester I, 2007-2008 (071)

(Dr. Salim Messaoudi)

Course #: Math 533
Title: Complex Analysis
Textbook: Complex Analysis by Lars V. Ahlfors (Third Edition)
Extra Lecture notes on Complex Analysis by I. F. Wilde
References Real and Complex Analysis by W. Rudin

Objective: This course aims to strengthen the introductory concepts of complex analysis taken in the undergraduate course. By the end of this course, the student should have well understood the concepts of Analyticity of functions, complex integration, and get an idea about the conformal mappings.

Wk	Chapters	Material
1	Chapter 1	The Algebra of complex numbers and representations The spherical representation
2	Chapter 2	Concept of Analytic functions: Limits – Continuity – Analyticity – The Cauchy-Riemann equations Harmonic functions
3		The Exponential, Trigonometric and Logarithmic functions.
4	Chapter 4	Fundamental theorems
5		Cauchy's integral Formula
6		Local properties of Analytical functions
7		General form of Cauchy's theorem
8		Calculus of Residues
9		Harmonic functions
10	Chapter 5	Power series expansions
11		Partial fraction and Factorization
12-15	Chapter 6	Conformal Mapping

Grading Policy: Homework 30%, Midterm 35%, Final 35%