King Fahd University of Petroleum and Minerals
Department of Mathematical Sciences
SYLLABUS
Semester I, 2012-2013 (121)
(Dr. Adel Khalfallah)

Course #: **Math 533**
Title: Complex Analysis
Textbook: Complex Analysis by Lars V. Ahlfors (Third Edition)

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	Date	Chapters	Material
1	Sep. 01-05	Chapter 1,2	The Algebra of Complex Numbers. Concept of Analytic Functions: Limits – Continuity – Analyticity.
2	Sep. 08-12	Chapter 2	The Cauchy-Riemann Equations, Harmonic functions
3	Sep. 15-19		The Exponential, Trigonometric and Logarithmic Functions.
4	Sep. 22-26	Chapter 4	Fundamental Theorems
5	Sep. 29- Oct 03		Cauchy's Integral Formula
6	Oct. 06-10		Local Properties of Analytical Functions
7	Oct. 13-17		General Form of Cauchy's Theorem
Midterm Exam: Tuesday 16 October, 2012 (30 %)			
Eid Al-Adha Break: Thursday, Oct. 18 - Friday, Nov. 2, 2012			
8	Nov. 3-7		Calculus of Residues
9	Nov. 10-14		Harmonic Functions
10	Nov. 17-21	Chapter 5	Power Series Expansions
11	Nov. 24-28		Partial Fraction and Factorization
12-13	Dec. 1- 12	Chapter 6	Conformal Mapping. Dirichlet's Problem
14-15	Dec. 15-26	Presentations	
Final Exam: Tuesday January 1, 2013 (40%)			

Evaluation Policy: Assignments: 30%, Midterm Exam: 30%, Final 40%.

Important Dates

Sep. 12	Last day for dropping course(s) without permanent record
Oct. 10	Last day for dropping course(s) with grade of "W" thru **http://regweb.kfupm.edu.sa**
Nov. 21	Last day for withdrawal from all courses with grade of "W" thru the Univ Registrar Office
Dec. 19	Last day for withdrawal from all courses with grade of "WP/WF" thru the University Registrar Office

Recent references

1) E. Freitag, R. Busam, *Complex analysis*, Universitext, 2nd edition, 2009, Springer

http://www.springerlink.com/content/978-3-540-93982-5/

2) T.W. Gamelin, *Complex Analysis*, Springer, 2001.

3) R.E. Greene, S.G. Krantz, *Function Theory of One Complex Variable*, AMS, 2001.

4) B.P. Palka, *An Introduction to Complex Function Theory*, Springer, 1991.