King Fahd University of Petroleum and Minerals

Department of Mathematical Sciences

MATH 430 Introduction to Complex Variables

Semester II, 2005-2006 (052)

Dr. F. D. Zaman

Text Book: E.B. Saff and A.D. Snider, Fundamentals of Complex Analysis for Mathematics, Science and Engineering, Second Edition, Prentice Hall.

Objectives: This course is designed to introduce basic notions and methods of function of a complex variable, analytic functions, complex integrations and residue calculus including branch line integrals.

Week	*Date*	Chapter	Topic
1 - 2	Feb. 12 – 22	1.1 – 1.6	Algebra of complex numbers, geometric and polar representation, powers and roots, planar sets.
3 - 4	Feb.25–Mar 1	2	Limit and continuity, analytic functions, Cauchy Riemann equations, harmonic functions.
5 - 6	Feb. 4 – 15	3	Elementary functions
7	Mar. 18 – 22	4.1 – 4.3	Contours and contour integrals, independence of path.
8	Mar. 25 – 29	4.4 – 4.6	Cauchy integral theorem, Cauchy integral formula, bounds to analytic functions.
8	Apr 3 – 5	5.1 – 5.4	Series for analytic functions
9	Apr. 8– 12	5.5 – 5.7	Laurent series, zeros and singularities.
10	Apr. 15 – 19	6.1- 6.2	Residue theorem, trigonometric integrals.
11	Apr. 22– 26	6.3 – 6.4	Improper integrals and Jordan's Lemma.
12	Apr.29-May3	6.5	Indented contours and applications.
13	May 6– 10	6.6	Integrals of multi-valued functions.
14	May 13 – 17	7.1 – 7.2	Conformal mapping, invariance of Laplace equation
15	May 20 – 24	7.3 – 7.5	Transformations.
16	May 27 – 28	7.6	Applications.

Office: 5 – 430 Phone 2189
Email: fzaman@kfupm.edu.sa

Evaluation Scheme

Major # 1	25 %
Major # 2	25 %
Assignments/Attendance	15 %
Final	35 %