King Fahd University of Petroleum and Minerals

Department of Mathematical Sciences

SYLLABUS **121**

Dr. Ashfaque H. Bokhari

Course:	Math 302
Title:	Engineering Mathematics
Textbook:	Advanced Engineering Mathematics by Zill, Wright and Cullen (Fourth Edition, 2011).
Objectives:	This course is designed to expose electrical and other engineering students to some basic ideas in vector calculus, linear algebra and complex numbers.
Bulletin Description:	Vector analysis including vector fields, gradient, divergence, curl, line and surface integrals, Gauss' and Stoke Introduction to complex variables. Vector spaces and subspaces. Linear independence, basis and dimension. Equations. Orthogonality. Eigenvalues and eigenvectors. Applications to systems of differential equations.

Wk	Date	Sec.	Material	Homework
1	Sep. 01-05	7.6	The Vector Space R^n	2, 3, 22, 23, 25
2	Sep. 08-12	8.2 8.3	Systems of Linear Algebraic Equations Rank of a Matrix	2, 7, 12 8, 9, 10, 15
3	Sep. 15-19	8.6 8.8	Inverse of a Matrix (only using Theorem 8.6.4) The Eigenvalue Problem	1, 2, 19, 30, 51 1, 8, 16
4	Sep. 22-26	8.10 8.12	Orthogonal Matrices (excluding example 4) Diagonalization (excluding example 6)	5, 8, 9, 16 2, 14, 28
5	Sep. 29-Oct.03	9.1 9.5 9.6	Vector Functions Directional Derivatives Tangent Planes and Normal Lines	1, 15,18,33, 36, 41 6, 8, 23 2, 16, 34, 38
First Major Exam October 01, 2012 (Material to include: Sections 7.6 – 8.12)				
6	Oct. 06-10	9.7 9.8	Curl and Divergence Line Integrals	8, 10, 26, 30 6, 14, 23, 30
7	Oct. 13-17	9.9 9.12	Independence of Path Green's Theorem	2, 12,15, 22, 25 1, 2, 17, 20, 29
Id al-Adha Vacation October 18 – November 02				
8	Nov. 03-07	9.13 9.14	Surface Integrals Stokes' Theorem	1, 2, 6, 18 1, 2, 5, 6
9	Nov. 10-14	9.16 17.1	Divergence Theorem Complex Numbers	2, 4, 11, 14 2, 18, 30, 34
10	Nov. 17-21	17.2 17.4	Powers and Roots Functions of a Complex Variable	6, 16, 33, 34 8, 10, 14, 21, 32
Second Major Exam November 21, 2012 (Material to include : Sections 9.1-1.14)				
11	Nov. 24-28	17.5 17.6	Cauchy-Riemann Equations Exponential and Log. Functions	1, 2, 6, 22 13, 28, 32, 47
12	Dec. 01- 05	17.7 18.1	Trigonometric and Hyperbolic Functions Contour Integrals (excluding Theorem 18.1.3)	8, 10, 16 3, 7, 9
13	Dec. 08-12	18.2 18.4	Cauchy-Goursat Theorem Cauchy's Integral Formulas	2, 5, 15 4, 10, 14
14	Dec. 15-19	19.2 19.3 19.4	Taylor Series (Definition & Examples) Laurent Series (Definition & Examples) Zeros and Poles	2, 4 2, 6, 21, 26 2, 4, 6, 10, 16
15	Dec. 22-26	19.5 19.6	Residues and Residue Theorem Evaluation of Real Integrals	2, 6, 8 22 11, 12, 32

KFUPM attendance policy will be enforced. Final Exam shall be comprehensive.

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Grading Policy: Two Majors **25% each**; **Quizzes 10%**; **Home Work 3%**; **Attendance 2 %**; Final **35%**

Note: ***The final Exam will be comprehensive and date and time of the final exam will be announced later.***