King Fahd University of Petroleum and Minerals

Department of Mathematics and Statistics

SYLLABUS **111**

Instructor: Dr. Othman Echi

Course:	Math 302
Title:	Engineering Mathematics
Textbook:	**Advanced Engineering Mathematics (Fourth Edition) by D.G. Zill and W.S. Wright, International Edition.**
Objectives:	This course is designed to expose electrical and other engineering students to some basic ideas in vector calculus, linear algebra and complex numbers.
Catalogue Description	Vector analysis including vector fields, gradient, divergence, curl, line and surface integrals, Gauss' and Stokes' theorems. Introduction to complex variables, vector spaces and subspaces. Linear independence, basis and dimension, solution of linear equations, orthogonality, eigenvalues and eigenvectors.

Grading Policy

KFUPM attendance policy will be enforced. Final Exam shall be comprehensive.
Office: 5-201-4 **Tel**: 860- 1802 **E-mail**: echi@kfupm.edu.sa **Webpage** http://faculty.kfupm.edu.sa/math/echi
Grading Policy: Two Majors each 25%; Quizzes 10%; HW and Attend. 5 %, Final 35%.

EXAMS:

1. **Major Exam I: Thursday, October 13, 2011 (1:00 p.m. - 3:00 p.m.)**
   Material: 7.6, 8.2, 8.3, 8.6, 8.8.

2. **Major Exam II: Thursday, November 24, 2011 (1:00 p.m. - 3:00 p.m.)**
   Material: 8.10, 8.12, 9.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.12, 9.13.

3. **Final Exam: Monday, 09-Jan-2012 at 7:30 AM**

Week	Sec.	Material	Homework
1	7.6	Vector Spaces	1*, 2*, 3*, 11,14*, 22*, 23*,24
2	8.2 8.3	Systems of Linear Algebraic Equations Rank of a Matrix	1*,7*, 12* 8*,9,10, 14*
3	8.6 8.8	Inverse of a Matrix The Eigenvalue Problem	1,2*,30*,51,52* 1*,8*,16*
4	8.10 8.12	Orthogonal Matrices Diagonalization	5*,8*,9*,16* 1,2*,4,14*,28*
5	9.1 9.5 9.6	Vector Functions Directional Derivatives Tangent Planes and Normal Lines	1,2, 15*,18*,33*,36* 2,6*,8*,14 2, 6, 16*, 34*, 38*
6	9.7 9.8	Curl and Divergence Line Integrals	4,8*,10*,26*, 29, 30 4,6,14*,23*,30*
7	9.9 9.12	Independence of Path Green's Theorem	2*,6,20*,22* 1*,2*,4, 29*
8	9.13 9.14	Surface Integrals Stokes' Theorem	1*, 2*,4, 6,18* 1*,2*,5,6*
9	9.16 17.1 17.2	Divergence Theorem Complex Numbers Powers and Roots	1,2*,4*,11*,13,,14 2*,6, 18*, 30*, 34*,40 12,16,33*,34*
10	17.3 17.4 17.5	Sets in the Complex Plane Functions of Complex Variable Cauchy-Riemann Equations	4*, 6*, 24, 26 8*, 10*,12,14,21*,23* 1*,2*,5,6*,8
11	17.6 17.7	Exponential and Log. Functions Trigonometric and Hyperbolic Functions	2,4,8,13*, 28*,32*, 47* 6,8,10*, 16*
12	18.1 18.2	Contour Integrals Cauchy-Goursat Theorem	1,3,7,9 2*,5*,8,15*
13	18.3 18.4	Independence of Path Cauchy's Integral Formulas	1,2*,6*,18*,19* 3,4*, 10*,14*,23
14	19.1 19.2 19.3 19.4	Sequences and Series Taylor Series (Definition & Examp.) Laurent Series (Definition & Examp.) Zeros and Poles	 2*,4* 2*,4,6*,21*,25,26*,27,28 2*,4*,6*,10*,14*,16*
15	19.5 19.6	Residues and Residue Theorem Evaluation of Real Integrals	1,2,8,10,22, 24 11,12,32

Only problems with * should be submitted for grading.