King Fahd University of Petroleum and Minerals

Department of Mathematics and Statistics

SYLLABUS **101**

Instructor: Dr. Othman Echi

Course:	Math 302
Title:	Engineering Mathematics
Textbook:	Advanced Engineering Mathematics by P. O'Neil, **International Student 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.

Important information

Oct 6	Last day for dropping course(s) without permanent record
Nov 3	Last day for dropping course(s) with grade of "W" thru Internet
Dec12	Last day for withdrawal from **all courses** with grade of "W" thru the University Registrar Office
Jan 9	Last day for withdrawal from all courses with grade of "WP/WF" thru the University Registrar Office

Grading Policy

KFUPM attendance policy will be enforced. Final Exam shall be comprehensive.
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Grading Policy: Two Majors each 25%; Quizzes 10%; HW and Attend. 5 %, Final 35%.

Exams:

1. **Major Exam I: Wednesday, November 3, 2010 (05:30 to 07:30 pm)**
   Material: 6.4 - 9.3
2. **Major Exam II: Thursday – December 09, 2010(12:30 to 02:30 pm)**
   Material: 12.1 – 13.7
3. **Final Exam: Wednesday, January 26, 2011 (7:00 PM).**

Wk	Date	Sec.	Material	Homework
1	Sep.25-29	6.4 6.5	The Vector Space R^n Linear Dependence and Independence	5*,8*,16* 6*,14*,17*,24
2	Oct.2-6	7.5 7.7 7.8	Homog. Systems of Linear Equations Non-homogeneous Systems Matrix Inverse	3*,6* 9*,13,14* 2,8*,16,17*
3	Oct.9-13	9.1 9.2	Eigenvalues and Eigenvectors Diagonalization	6,12*,17*,19*,20 4*,6,7*,12*
4	Oct.16-20	9.3 12.1	Orthogonal and Symmetric Matrices Vector Functions of one Variable	1*,6*,12 3,6*,12*
5	Oct. 23-Oct. 27	12.4 12.5	The Gradient Field Divergence and Curl	6*,8,14*,20 2*,6,10*,13,16*
6	Oct. 30-Nov 3	13.1 13.2	Line Integrals Green's Theorem	4,6*,10,15* 3,6*,11*,12,13*
7	Nov. 6-10	13.3 13.4	Independence of Path and Potential Theory Surface Integrals	4,8*,10,14* 2,7*,8*,10
8	Nov.27-Dec. 1	13.7 13.8	Divergence Theorem of Gauss The integral theorem of Stokes	2,4*,7,8,9,12* 4,6*,14*,20*
9	Dec.4-8	20.1 20.2	Complex Number (Polar Form) Loci and Sets of Points in the plane **(20.2.1 – 20.2.3)**	8,14*,22*,28*,29 1,2,6*,7,13*,18*
10	Dec.11-15	21.1 21.1. 21.2	Complex Functions, Limits and Continuity Cauchy-Riemann Equations Power Series	 2,3,4*,5,6*,12* 3*,9*,11*
11	Dec. 18-22	21.3 21.4 21.5	The Exponential and Trig. Functions The Complex Logarithm Powers **(21.5.1 - 21.5.3)**	2,4*,8,11*,13*,19* 3,4*,6*,8* 6*,8*,11*,12*,13
12	Dec. 25-29	22.1 22.2	Curves in the plane (Quick Review) Integration of Complex Function	1,3,7,9 2*,5*,8,15*
13	Jan. 1-5	22.3 22.4	Cauchy's Theorem Consequences of Cauchy's Theorem	2*,4,5*,8,12* 4*, 6*,8,14*
14	Jan. 8-12	23.1 23.2 24.1	Taylor Series (Defns & examples) Laurent Series (Defns & examples) Singularities	1,4*,5,10* 2,3*,5*,6*,7,8 3,4*,5*,6*,10,14*
15	Jan. 15-19	24.2 24.3.3	The Residue Theorem Evaluation of Real Integrals	1,2,3,5,9,15,16 10,12,14,15,18

Only problems with * should be submitted for grading.