King Fahd University of Petroleum and Minerals

Department of Mathematics and Statistics

SYLLABUS **091**

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

March 5	**Normal Wednesday classes**
Oct 14	Last day for dropping course(s) without permanent record
Nov 11	Last day for dropping course(s) with grade of "W" thru Internet
Dec 23	Last day for withdrawal from **all courses** with grade of "W" thru the University Registrar Office
Jan 20	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% .

Only problems with * should be submitted for grading.

Wk	Date	Sec.	Material	Homework
1	Oct.3-7	6.4 6.5	The Vector Space R^n Linear Dependence and Independence	5*,8*,16* 6*,14*,17*,24
2	Oct.10-17	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.17-21	9.1 9.2	Eigenvalues and Eigenvectors Diagonalization	6,12*,17*,19*,20 4*,6,7*,12*
4	Oct.24-28	9.3 12.1	Orthogonal and Symmetric Matrices Vector Functions of one Variable	1*,6*,12 3,6*,12*
5	Oct. 31-Nov. 4	12.4 12.5	The Gradient Field Divergence and Curl	6*,8,14*,20 2*,6,10*,13,16*
First Major Exam. Tuesday, November 3, 2009				
6	Nov. 7-11	13.1 13.2	Line Integrals Green's Theorem	4,6*,10,15* 3,6*,11*,12,13*
7	Nov. 14-18	13.3 13.4	Independence of Path and Potential Theory Surface Integrals	4,8*,10,14* 2,7*,8*,10
Eid Adha Break Nov. 19- Dec. 04				
8	Dec.5-9	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.12-16	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.19-23	21.1	Complex Functions, Limits and Continuity, Cauchy-Riemann Equations	2,3,4*,5,6*,12*
Second Major Exam Tuesday December 22, 2009				
11	Dec.26-30	21.2 21.3 21.4	Power Series The Exponential and Trig. Functions The Complex Logarithm	3*,9*,11* 2,4*,8,11*,13*,19* 3,4*,6*,8*
12	Jan. 02-06	21.5 22.1 22.2	Powers **(21.5.1 - 21.5.3)** Curves in the plane (Quick Review) Integration of Complex Function	6*,8*,11*,12*,13 1,3,7,9 2*,5*,8,15*
13	Jan. 09-13	22.3 22.4	Cauchy's Theorem Consequences of Cauchy's Theorem	2*,4,5*,8,12* 4*, 6*,8,14*
14	Jan. 16-20	23.1 23.2 24.1 24.2	Taylor Series (Defns & examples) Laurent Series (Defns & examples) Singularities The Residue Theorem	1,4*,5,10* 2,3*,5*,6*,7,8 3,4*,5*,6*,10,14* 1,2*,3*,5,9*,15,16*
15	Jan 23-27	24.3.3	Evaluation of Real Integrals	10,12,14,15,18