

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematical Sciences**  
SYLLABUS  
2005-2006 (Term 052)

Course #:	Math 302
Title:	Engineering Mathematics
Textbook:	Advanced Engineering Mathematics by P. O'Neil, 5 <sup>th</sup> edition (2003).
Objectives:	This course is designed to expose electrical and other engineering students to some basic ideas and notions of applied mathematics including 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.

Major 1: Tuesday, March 7, 2006

Major 2: Sunday, April 16, 2006

Major 3: Wednesday, May 17, 2006

Final Exam: May 29 - June 8, 2006

**Thursday, Feb. 16** is a normal Saturday class

Wednesday March 29, 2006: Last day for dropping courses with "W" (Thru Internet)

Wednesday April 19, 2006: Last day for dropping all courses with "W" (Thru Regist. Office)

Wednesday May 17, 2006 withdrawal from all courses with grade of "WP/WF" (Thru Regist. Office)

Wk	Date	Sec.	Material	Homework
1	Feb.12-16	5.4 5.5	The Vector Space $\mathbb{R}^n$ Linear Dependence and Independence	5*,8*,16*,17*,19*,21 6*,14*,17*,24,26
2	Feb. 18-22	6.5 6.7	Solution of homogeneous Systems of Linear Equations Non-homogeneous Systems of Linear Equations	3*,17,18*,20 9*,13,15*
3	Feb.25- March 1	8.1 8.2	Eigenvalues and Eigenvectors Diagonalization	6,16*,21*,23,26* 6,7*,18*
4	Mars.4-8	8.3 11.1	Orthogonal and Symmetric Matrices Vector Functions of one Variable	2*,6*,12,14 6*,10,16,18*
5	March 11-15	11.4 11.5	The Gradient Field Divergence and Curl	6*,10,14*,20,22*,28* 4*,6,10,12*,19*
6	March 18-22	12.1 12.2	Line Integrals Green's Theorem	6*,12,20,22*,27*,29 2*,4,12,14*,17*
7	March.25-29	12.3 12.4	Independence of Path and Potential Theory Surface Integrals	4,8*,12,18*,20 4,8*,10*,16*
***	April 1-2	***	<b>Midterm Break</b>	***
8	April 3-5	12.7 12.8	Divergence Theorem of Gauss The integral theorem of Stokes	6*,8,10,12,14*,16* 4,6*,14*,22*
9	April 8-12	20.1 20.2	Complex Number (Polar Form) Loci and Sets of Points in the Complex Plane	2,10,22*,28*,34* 1,2,6*,7,16*,31*,36, 37*
10	April 15-19	21.1	Complex Functions, Limits and Continuity Derivatives (Definition, Properties, Cauchy-Riemann Equations)	2,3,4*,5,6*,12*
11	April 22-26	21.2 21.3 21.4	Power Series The Exponential and Trigonometric Functions The Complex Logarithm	3*,9*,11* 2,4*,6,8,11,15*,19*, 23* 3,4*,6*,8*
12	April 29- May 3	21.5 22.1 22.2	Powers Curves in the plane ( Quick Review) Integration of Complex Function	2,6*,10,14*,20*,23*,24 1,3,7,9 2*,5*,8,20,24*
13	May 6-10	22.3 22.4	The Cauchy Integral Theorem Consequences of Cauchy's Theorem	2*,4*,5*,12,17* 4*,6*,8,15*
14	May 13-17	23.2 24.1 24.2	Laurent Series (Definitions and Examples) Singularities The Residue Theorem	1,3*,5*,6*,7,12 3,6*,10,16*,18,19* 1,2*,3*,5,9*,16*,24,25
15	May 20-24	24.3.5	Evaluation of Real Integrals	29,31*,33*,41.
16	May 27-28	*	Review	***