

King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
SYLLABUS 092

Course:	Math 302
Title:	Engineering Mathematics
Textbook:	Advanced Engineering Mathematics by P. O'Neil, International Student Edition (6th 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.

Wk	Date	Sec.	Material	Homework
1	Feb.20-24	6.4 6.5	The Vector Space \mathbb{R}^n Linear Dependence and Independence	1,7, 14 5,14,18,22
2	Feb. 27-March 03	7.5 7.7 7.8	Homog. Systems of Linear Equations Non-homogeneous Systems Matrix Inverse	4,7,12 8,11,14 1,6,10,14
3	March 6-10	9.1 9.2	Eigenvalues and Eigenvectors Diagonalization	11,14,16 3,7,10
4	March 13-17	9.3 12.1	Orthogonal and Symmetric Matrices Vector Functions of one Variable	2,6,12 1,6,11
5	March 20-24	12.4 12.5	The Gradient Field Divergence and Curl	1,4,8,14,20 1,6,10,12,13
First Major Exam Sunday March 28				
6	March 27-31	13.1 13.2	Line Integrals Green's Theorem	2, 4,6,10,14 1,4, 11,12,13
7	April 3-7	13.3 13.4	Independence of Path and Potential Theory Surface Integrals	2, 4,8,10,13 1,7,8,10
8	April 10-14	13.7 13.8	Divergence Theorem of Gauss The integral theorem of Stokes	1,5,7,8 1,3,6,14,20
9	April 24-28	20.1 20.2	Complex Number (Polar Form) Loci and Sets of Points in the plane (20.2.1 – 20.2.3)	3,9,14,22,28 2,6,7,13,18
Second Major Exam Sunday May 2				
10	May 01-05	21.1	Complex Functions, Limits and Continuity, Cauchy-Riemann Equations	1,3,4,5,6
11	May 08-12	21.2 21.3 21.4	Power Series The Exponential and Trig. Functions The Complex Logarithm	1,5,8,9 1,3,8,11,13 2,4,6,8
12	May 15-19	21.5 22.1 22.2	Powers (21.5.1 - 21.5.3) Curves in the plane (Quick Review) Integration of Complex Function	4,6,8,11,12 2,4,7,9 1,5,8,15
13	May 22-26	22.3 22.4	Cauchy's Theorem Consequences of Cauchy's Theorem	1,4,5,8,11 4, 6,8,14
14	May29-June 02	23.1 23.2 24.1 24.2	Taylor Series (Defns & examples) The Laurent Series (Defns & examples) Singularities The Residue Theorem	2,4,5,11 3,5,6,7,9 1,3,4,5,6,10,12 2,3,5,9,15,16
15	June05-09	24.3. 3	Evaluation of Real Integrals	11,12,14,15,19