

King Fahd University of Petroleum & Minerals

Department of Mathematics and Statistics

Syllabus of Math 280 (101)

(Course Instructor: **Dr. Boubaker Smii**; Office: 7-110; Tel: 7763; email: boubaker@kfupm.edu.sa)

Course: Math 280
 Title: Introduction to Linear Algebra
 Textbook: *Elementary Linear Algebra*, 6th ed. (1996), by Bernard Kolman
 Objectives: To introduce the students to the basic concepts and techniques of elementary linear algebra

Week	Date	Section	Material	Homework Problems
1	Feb 12-16	1.1 1.2	Systems of linear equations Matrices: Matrix operations	2,4,8,15,18,20 2,6,8,11,14,25
2	Feb 19-23	1.3 1.4	Algebraic properties of matrix operations Special types of matrices	3,12,19,20,30,32 1,3,7,10,15,36
3	Feb 26-Mar 2	1.5 1.6	Echelon form of a matrix Finding A^{-1}	1,6c,8,14,24,26 6,8,14,24,26
4	Mar 5-9	2.2 2.3	Vector spaces Subspaces	3,4,9,12,18,21 2,6,8,10,11,24
5	Mar 12-16	2.4 2.5	Linear independence Basis and dimension	2,4,6,12(a,c),19,23 2,4,8,10,13,15,20,26
6	Mar 19-Mar 23	2.6 2.7	Coordinates and isomorphisms Homogeneous systems	2,4,13,17,22,35 2,6,14,18,19
7	Mar 26-30	2.8 3.1	The rank of a matrix The standard inner product of \mathbb{R}^2 and \mathbb{R}^3	2,6,10,14,20,26 2,6,8,10,24,28,31
8	Apr 2-6	3.3 3.4	Inner product spaces The Gram-Schmidt process	7,10,14,28,34,36 2,8,9,14,23,26
	April 9-13		MIDTERM VACATION	
9	Apr 16-20	4.1 4.2	Definition and example of a linear transf. The kernel and range of a linear transf.	2,7,10,13,16,20 2,4,9,13,19,26
10	Apr 23-27	4.3 4.6	The matrix of a linear transformation Similarity	2,7,9,14,18,22 2,5,6,7,8,16
11	Apr 30-May 4	5.1 5.2	Definition of a determinant Properties of determinants	8,10,12,14,16 4,9,11,20,26,30
12	May 7-11	5.3 5.4	Cofactor expansion The inverse of a matrix	2,4,6,8,12,14 2,4,7,10,12,13
13	May 14-18	5.5 6.1	Other applications of determinants Diagonalization	2,3,4,6,8,13 2,5,8,10,11,15,16,18
14	May 21-25	6.1 6.2	Diagonalization (cont'd.) Diagonalization of symmetric matrices	22,26,29,33 2,4,16,20,24,28,31
15	May 28-May 31	6.2 6.3	(cont'd.) Cayley-Hamilton's Theorem Real quadratic forms	2,4,10,12,16,18
16	June 1st		Catch-up	

The second Semester of 2010-11 (102)
Math 280

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08:00 – 10:00 a.m.
Also by Appointment

Exams and Distribution of Marks:

Exam I (20%): Material: From Section 1.1 To Section 2.3, Tuesday, March 15, 2011
Exam II (20%): Material: From Section 2.4 To Section 3.4, Tuesday, April 19, 2011
Exam III (20%): Material: From Section 4.1 To Section 5.4, Tuesday, May 10, 2011

<i>Time for exams will be discussed</i>

Homework and Attendance: 05%

Final Exam 35% (Comprehensive): The time and place of the Final Exam will be determined by the Office of the Registrar.

The DN Grade: According to the university regulation