

King Fahd University of Petroleum & Minerals

Department of Mathematics and Statistics

Syllabus of Math 280 (071)

(Course Instructor: Dr. A. Shawky Ibrahim; Office: 5-307; Tel: 2439; email: ashawki@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	Sep 8-12	1.1	Systems of linear equations	2,4,8,15,18,20
		1.2	Matrices: Matrix operations	2,6,8,11,14,25
2	Sep 15-19	1.3	Algebraic properties of matrix operations	3,12,19,20,30,32
		1.4	Special types of matrices	1,3,7,10,15,36
Sunday, September 23, 2007: "National Day"				
3	Sep 22-26	1.5	Echelon form of a matrix	1,6,8,14,24,26
		1.6	Finding A^{-1}	6,8,14,24,26
4	Sep 29 – Oct 3	2.2	Vector spaces	3,4,9,12,18,21
		2.3	Subspaces	2,6,8,10,11,24
Id Al-Fitr Vacation (Oct 4 – Oct 19, 2007)				
5	Oct 20-24	2.4	Linear independence	2,4,6,12(a,c),19,23
		2.5	Basis and dimension	2,4,8,10,13,15,20,26
6	Oct 27-31	2.6	Coordinates and isomorphisms	2,4,13,17,22,35
		2.7	Homogeneous systems	2,6,14,18,19
7	Nov 3-7	2.8	The rank of a matrix	2,6,10,14,20,26
		3.1	The standard inner product of \mathbb{R}^2 and \mathbb{R}^3	2,6,8,10,24,28,31
8	Nov 10-14	3.3	Inner product spaces	7,10,14,28,34,36
		3.4	The Gram-Schmidt process	2,8,9,14,23,26
9	Nov 17-21	4.1	Definition and example of a linear transf.	2,7,10,13,16,20
		4.2	The kernel and range of a linear transf.	2,4,9,13,19,26
10	Nov 24-28	4.3	The matrix of a linear transformation	2,7,9,14,18,22
		4.6	Similarity	2,5,6,7,8,16
11	Dec 1-5	5.1	Definition of a determinant	8,10,12,14,16
		5.2	Properties of determinants	4,9,11,20,26,30
12	Dec 8-12	5.3	Cofactor expansion	2,4,6,8,12,14
		5.4	The inverse of a matrix	2,4,7,10,12,13
Id Al-Adha Vacation (Dec 13 – Dec 28, 2007)				
13	Dec 29-Jan 2	5.5	Other applications of determinants	2,3,4,6,8,13
		6.1	Diagonalization	2,5,8,10,11,15,16,18
14	Jan 5-10 (2008)	6.1	Diagonalization (cont'd.)	22,26,29,33
		6.2	Diagonalization of symmetric matrices	2,4,16,20,24,28,31
15	Jan 12-16	(cont'd.)		
		6.3	Real quadratic forms	2,4,10,12,16,18

The First Semester of 2007-08 (071)
Math 280

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Office Hours: Sat – Monday – Wed
7:00 – 8:40 a.m.
Also by Appointment

Exams and Distribution of Marks:

Exam I (16%): Chapter 1, Monday, October 1, 2007
Exam II (22%): Chapter 2, Saturday, November 10, 2007
Exam III (22%): 3.1 – 4.6, Monday, December 3, 2007

All of the above exams will be conducted during the regular class time

Homework and Attendance: 10%

Final Exam 30% (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