

**King Fahd University of Petroleum and Minerals**  
**Department of Mathematics & Statistics**

**Syllabus Math 280**

Semester I, 2014 (141)

Instructor: Dr. Khalid AbdulAziz Al-Shammari

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**Course:** Math 280  
**Title:** Introduction to linear algebra  
**Office Hours** **Sunday, Tuesday and Thursday:** (9:00 - 10:00)  
**Location:** **Building No. 05-328, Phone: 3029**

<b>Week #</b>	<b>Date</b>	<b>Section</b>	<b>Topic</b>	<b>Homework</b>
1	AUG, 31 – Sep, 4	1.1 1.2	Systems of linear equations Row echelon form	1;3; 6;7 1;2; 3(a,c,e);5(a,d,f,i);6(b,d)
2	Sep. 7 -11	1.3 1.4	Matrix arithmetic Matrix algebra	2(a,e);9;10(a,b);11;13 1;2;3; 5;12;14;19;22;24;25
3	Sep. 14 – 18	1.5	Elementary matrices	1;3;4;7;8;11,12(a,d)
4	Sep. 21 – 25	2.1 2.2 2.3	The determinant of a matrix Properties of determinants Additional topics and applications <b>Test - 1</b>	3(a;c;d;h);5,9,11 2;4;5;6;7;9;12;13 1(a,c,d); 2(c,d,e);4;15
<b>Eid Al-Adha Vacation</b>				
5	Oct. 12 – 16	3.1 3.2	Vector space: Definition and examples Subspaces	3;6;7;8;10;12 1(a,b,c,d);2(b,c,d);4(b);10(b) 11(b,c,d);12(a,b,c);13;14;16
6	Oct. 19 -23	3.3 3.4	Linear independence Basis and dimension	1(a,c,d,e);2(a,b,c);4(b,c);5;8( a,b,c); 10;12;16 3;5;7;10;12;14
7	Oct. 26 – 30	3.5 3.6	Change of basis Row space and column space <b>Test - 2</b>	1(a,b);6;8;9;10 1(a,b);2(a,b,c);4(a,b,c,d);7;9, 12
8	Nov. 2 – 6	4.1 4.2	Linear transformations: definition and examples Matrix representations of linear transformations	1(b,c);3;6(a,b,c);8(a,b);10;12 ;13;16 2(a,b),4(b,c);7;8;12;16
9	Nov. 9 – 13	4.3 5.1	Similarity Orthogonality: The scalar product in $\mathbb{R}^n$	2;3;4;6;8;14 1(a,c,d);3(a,b,c);6;8(a,b);11; 16;18
10	Nov. 16 – 20	5.2 5.4	Orthogonal subspaces Inner product spaces <b>Test - 3</b>	1(a,c);4;7;8;9;12;13 2;4;7(a,b);10;12;24
11	Nov. 23 - 27	5.5	Orthonormal sets	1(c,d);2;4;8;10;14;20;22 30;32;34
12	Nov. 30 – Dec 4	5.6 5.7	The Gram-Schmidt orthogonalization process Orthogonal polynomials	1;4;5;6;8;12;16 1;2;3
13	Dec. 7 – 11	6.1	Eigenvalues and eigenvectors <b>Test - 4</b>	1(e,f,g,h);4;5;8;13
14	Dec. 14 – 18	6.3	Diagonalization	1(a,b,c,f);2;7;8(a,b,g);9
15	Dec. 21 - 25	6.6	Quadratic forms	1(a,b);3(a,b,c);6(a,b,d);7(a,b, c);8;10

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**SYLLABUS**  
**MATH 280 (141)**

**Textbook:** Linear algebra with applications, Steven J. Leon, Pearson (2014).

**Objectives:** This course introduces the basic concepts and techniques of elementary linear algebra to students.

**Grading Policy:**

1. Four in Class Tests (4x12.5%)
2. Final Exam (35%) (Comprehensive)
3. Homework + Attendance (15%)

**Exam Questions:**

The questions of the exams are based on the examples, homework problems and the exercises of the textbook.

**Attendance:**

KFUPM attendance policy will be enforced. A **DN grade** will be awarded to any student who accumulates 9 unexcused absences.

**Missing Tests:**

No makeup exam will be given under any circumstance. When a student miss a test for a legitimate reason (such as medical emergencies), his grade for this test will be determined based on the existing formula which depends on his performance in the non-missing tests.

**Academic Integrity:**

All KFUPM policies regarding ethics apply to this course.