Introduction to Linear Algebra
Math 250, Section 13
Spring 2013

Time and Location: MW, 3:55-5:15pm, Hickman Hall 202, C/D

Instructor: Yusra Naqvi
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Office: Hill Center 606, Busch
Office Hours: Wed 1:30-3:00pm and by appointment

Prerequisites: Calculus II

Textbook: Spence, Insel, and Friedberg: *Elementary Linear Algebra: A Matrix Approach*, 2nd Edition, Prentice Hall, 2008. (ISBN 978-0-13-187141-0)

Course Webpage: http://math.rutgers.edu/~ynaqvi/math250sp13.html

Online resources: The authors of the textbook have an online companion website which contains supplementary material and true/false tests. This is available at
http://cwx.prenhall.com/bookbind/pubbooks/spence/
The Math Department also maintains a webpage with additional resources for this course at
http://www.math.rutgers.edu/courses/250/

Course topics: This course covers systems of linear equations, Gaussian elimination, matrices and determinants, vectors in two- and three-dimensional Euclidean space, vector spaces, and an introduction to eigenvalues and eigenvectors.

Absences: You are expected to attend every class. An absence due to an emergency may be excused, provided that you can supply acceptable written evidence if required, and that you notify the lecturer *as soon as possible*. Students who miss a significant number of classes may have their course grades lowered by one step (for example, from a B+ to a B). Attendance is very useful!

Homework: A list of suggested homework problems for each chapter can be found on the course webpage. Selected problems will periodically be collected for grading. It is ***strongly*** recommended that you attempt to solve all of the suggested problems, and quiz problems will typically be variants of these homework problems. It is very important to solve the homework for each lecture before the next one in order to keep up with the class. Students with low homework scores will have their course grades lowered by one step.

Quizzes: A ten minute quiz will be given every Wednesday (unless there is an exam that day), and no make-ups will be given for these. There will be a total of about 11 quizzes. The lowest quiz grade will be dropped in order to accomodate unavoidable absences. In addition, there will be an informal two minute quiz during most lectures. These will primarily be used to keep track of attendance and to gauge student progress and understanding.

Exams: There will be two eighty-minute midterm exams and a three-hour cumulative final exam. Make-up exams will be only be allowed if you can supply *acceptable* written evidence, and if you notify the lecturer *before the end of the missed exam.*

Midterm Exam 1:	Wednesday, February 27
Midterm Exam 2:	Wednesday, April 10
Final Exam:	Wednesday, May 15, 12:00-3:00pm

Calculator: No calculators are allowed during quizzes and exams. However, students may use calculators or computers to solve homework problems.

Grading: The term grade will be based on the results of the examinations, and on class participation, which will be measured in various ways, including quizzes. It will be determined using the following point distribution:

Quizzes	100
1st exam	100
2nd exam	100
Final exam	200
Total	550

Course Outline: The following plan for the course is tentative and may be subject to changes.

Lecture	Date	Sections	Topics
1	W 1/23	1.1	Matrices and Vectors
		1.2	Linear Combinations
2	M 1/28	1.3	Systems of Linear Equations
3	W 1/30	1.4	Gaussian Elimination
4	M 2/4	1.6	Span of a Set of Vectors
5	W 2/6	1.7	Linear Dependence and Linear Independence
6	M 2/11	1.7	Homogeneous Systems
		2.1	Matrix Algebra
7	W 2/13	2.3	Invertibility and Elementary Matrices
		App. E	Uniqueness of Reduced Row Echelon Form
8	M 2/18	2.4	Inverse of a Matrix
		2.5	Partitioned Matrices and Block Multiplication
9	W 2/20	2.6	LU Decomposition of a Matrix
10	M 2/25		Review for First Midterm
11	W 2/27		**FIRST MIDTERM EXAM**
12	M 3/4	2.7	Linear Transformations
13	W 3/6	2.8	Invertibility of Transformations
14	M 3/11	4.1	Subspaces
		4.2	Basis and Dimension
15	W 3/13	4.3	Column Space and Null Space of a Matrix
16	M 3/25	3.1	Determinants; Cofactor Expansions
		3.2	Properties of Determinants
17	W 3/27	5.1	Eigenvalues and Eigenvectors
18	M 4/1	5.2	Characteristic Polynomial
19	W 4/3	5.3	Diagonalization of a Matrix
20	M 4/8		Review for Second Midterm
23	W 4/10		**SECOND MIDTERM EXAM**
24	M 4/15	5.5	Applications of Eigenvalues
21	W 4/17	6.1	Geometry of Vectors; Projection onto a Line
22	M 4/22	6.2	Orthogonal Vectors; Gram-Schmidt Process
25	W 4/24	6.3	Orthogonal Projection; Orthogonal Complements
26	M 4/29	6.4	Least Squares; Normal Equations
		6.5	Orthogonal Matrices
27	W 5/1	6.6	Symmetric Matrices; Quadratic Forms;
			Spectral Decomposition for Symmetric Matrices
28	M 5/6		Review for Final Exam