MATH 220H Syllabus
Fall 2007

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Office Hours: MWF 3:35-4:25P; TR 12:20-1:10P and by appointment

Course Description: Systems of linear equations, matrix algebra, determinants, eigenvalues and eigenvectors, orthogonality and least squares.

Prerequisite: Math 110 or 140.

Textbook: *Linear Algebra and its Applications* by David Lay, third edition update, published by Pearson/Addison Wesley.

Midterm: A 75 minute evening exam will be held on (TBA), 2007 at 6:30 PM.

Final Exam: A comprehensive final exam, covering all aspects of the course, will be given during the final examination period (December 17 through December 21). **Students should not make plans to leave University Park before Saturday, December 22**. Students must bring their ID cards to all exams.

Conflict and Makeup Exams: Only students with official University conflicts or a valid, documented excuse, will be permitted to schedule conflict or makeup exams. Students must sign up for conflict or makeup exams at least 48 hours in advance of the exam date.

Grading Policy: Grades will be assigned on the basis of 400 points distributed as follows:

75 points for homework and quizzes
75 points for enrichment assignments
100 points for the midterm exam
150 points for the final exam

Academic Integrity: During quizzes and exams, the use of books, calculators, or notes of any sort is not permitted, and communicating with anyone or copying anything fromm anyone is not permitted. Cell phones must be turned OFF. Also see the Student Guide to the University, Policy 49-20.

Course Outline:

(The number after each section is the approximate number of class periods)

1. LINEAR EQUATIONS IN LINEAR ALGEBRA
   - 1.1 Systems of Linear Equations (1.5)
   - 1.2 Row Reduction and Echelon Forms (1.5)
   - 1.3 Vector Equations (1)
   - 1.4 The Matrix Equation Ax-b (1)
   - 1.5 Solution Sets of Linear Systems (1)
   - 1.7 Linear Independence (1)
   - 1.8 Introduction to Linear Transformations (1)
   - 1.9 The Matrix of a Linear Transformation (1)
2. MATRIX ALGEBRA
   - 2.1 Matrix Operations (1)
   - 2.2 The Inverse of a Matrix (1)
   - 2.3 Characterizations of Invertible Matrices (1)
   - 2.8 Linear Subspaces (1.5)
   - 2.9 Dimensions and Rank (1.5)
3. DETERMINANTS
   - 3.1 Introduction to Determinants (1)
   - 3.2 Properties of the Determinants plus Cramer's rule from 3.3 (1)
5. EIGENPROBLEMS
   - 5.1 Eigenvalues and Eigenvectors (1)
   - 5.2 The Characteristic Equation (1)
   - 5.3 Diagonalization (1)
   - 5.5 Complex Eigenvalues (1)
6. ORTHOGONALITY AND LEAST SQUARES
   - 6.1 Inner product, Length, and Orthogonality (1)
   - 6.2 Orthogonal Sets (1)
   - 6.3 Orthogonal Projections (1)
   - 6.4 The Gram-Schmidt Process (no Factorization) (1)
   - 6.5 Least-Squares Problems (1)
7. SYMMETRIC MATRICES
   - 7.1 Diagonalization of Symmetric Matrices (1)