

## Syllabus for "Managerial Mathematics"

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Class Time: 2:20 p.m. - 5:20 p.m. on Monday, 2009

### Main Purpose and Requirements

This is a one-semester course which represents an introduction to linear algebra. Moreover, some of its significant applications which relate to finance and statistic analysis, such as mathematics of portfolio frontier, concept of complete market, and property of OLS, may be included. Students are required to have the background of calculus and to **STUDY HARD**. Also, discussions between students after classes are **STRONGLY** encouraged, sometimes are necessary, for better understanding the contents.

**Textbook:** Kolman and Hill, Introductory Linear Algebra: An Application-Oriented First Course, 8<sup>th</sup> Edition, Pearson Education, 2004.

Students will be evaluated by the following elements:

Mid-term examination: 35% ; Final examination: 35% ; Lab Session: 30%

### Course Schedule:

- (a) Linear Equation and Matrices.
- (b) Determinants.
- (c) Vectors in  $R^n$ .
- (d) Supplement Handouts.  
Calculus and Matrix Algebra. Optimization. Constrained Optimization.  
Mathematics of Portfolio Frontier.
- (e) Real Vector Spaces.  
Real Vector Spaces. Subspaces. Linear Independence. Basis and Dimension.  
Rank. Orthonormal Bases.
- (f) Eigenvalues, Eigenvectors, and Diagonalization.
- (g) Supplement Handouts.  
Concept of Complete Market. Property of OLS. Gauss-Markov Result.