Assistant Professor Jr-Yan Wang	**Fall 2010**
Room 202, Building 2, College of Management	**Thursday 14:20-17:20**
jywang@management.ntu.edu.tw	**02-33664987**

COURSE DESCRIPTION

Linear algebra is a basic but important course since linear applications arise in many areas such as engineering, chemistry, economics, business, ecology, biology, and psychology. The major objectives of this course are twofold. First, students who take this course will study some basics of the linear algebra. Linear algebra is the branch of mathematics concerned with the study of systems of linear equations (線性系統), matrix operations (矩陣運算), vector spaces (also called linear spaces) (向量空間), linear mappings (also called linear transformations) (線性轉換), eigenvalues and eigenvectors (特徵值與特徵向量), etc. Second, equipped with the knowledge of the linear algebra, several techniques to deal with management problems are discussed, including the least squares regression (最小平方迴歸), the linear programming (線性規劃), the principal component analysis (主成分分析), the Monte Carlo simulation (蒙地卡羅模擬), etc. It is my hope that you can learn some quantitative techniques in this course, which are the base for many advanced courses in the future.

TEXT AND READINGS

Required: Elementary Linear Algebra, by Larson and Falvo, 2009, 6th ed.

PowerPoint: http://www.management.ntu.edu.tw/~jywang/ → Course Information →
> Mathematics for Management (undergraduate level)

OFFICE HOUR

Rom 513, Building 2, College of Management

Friday 13:00-15:00 or after class or by appointment

EXAMS AND GRADINGS

Midterm Examination   35% (after Ch3)

Final Examination   35% (in the final exam week regulated by NTU)

Homework   20%

Class Participation   10%

COURSE OUTLINE

- Systems of Linear Equations (Ch1) (Polynomial curve fitting)
- Matrices (Ch2) (Least squares regression)
- Determinants (Ch3) (Cramer's rule to solve systems of linear equation)
- Vector Space (Ch4) (Change of basis and rotation)
- Inner Product Space (Ch5) (Least squares approximation) (HW 1)
- Linear Programming (Ch9) (Solve managerial optimal problems) (HW 2)
- Eigenvalues and Eigenvectors (Ch7) (Principal component analysis)
- Linear Transformations (Ch6) (Computer graphics)

TEACHING ASSISTANT

XXX   xxxxx@management.ntu.edu.tw