NATIONAL TAIWAN UNIVERSITY
Department of International Business
Mathematics for Management

Associate Professor Jr-Yan Wang	**Fall 2011**
Room XXX, Building X, College of Management	**Wednesday 14:20-17:20**
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COURSE DESCRIPTION

This course is essentially designed to teach the linear algebra, which is basic but important since linear applications arise in many areas such as engineering, chemistry, ecology, biology, psychology, and **economics and business**. The major objectives of this course are twofold. First, students who take this course will study some basic knowledge of the linear algebra. The linear algebra is a 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 can be the foundation 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/ $\rightarrow$ Course Information $\rightarrow$
     Mathematics for Management (undergraduate level)

OFFICE HOUR

Rom 513, Building 2, College of Management

Thursday 14:00-16:00 or after class or by appointment

EXAMS AND GRADINGS

Midterm Examination   40% (after Ch3)

Final Examination   40% (in the final exam week regulated by NTU)

Homework   20%

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 equations)
- Vector Space (Ch4) (Change of basis and rotation)
- Inner Product Space (Ch5) (Least squares approximation) (HW 1)
- Linear Programming (Ch9) ((Managerial) optimization problems) (HW 2)
- Eigenvalues and Eigenvectors (Ch7) (Principal component analysis)
- Linear Transformations (Ch6) (Computer graphics)

TEACHING ASSISTANT

XXX   XXX@XXX.ntu.edu.tw