

淡江大學 九十七 學年度第二學期課程教學計畫表

壹、科目名稱：**管理數學（二） Management Mathematics**

貳、授課教授：溫裕弘

參、開課系所班級：運輸管理學系 2B（上課時間/地點：Tue. 9, 10 / B706）

肆、必選修：必修

伍、學分數：2

陸、先修科目：微積分、管理數學(一)

柒、教學內容及進度：

課程目標：

管理數學主要為管理科學領域中的數學方法與基礎數學工具，本課程主要以線性代數(linear algebra)為基礎，包括：線性系統、矩陣、向量空間、線性轉換、正交化、特徵值與特徵向量、基礎微分方程、最佳化理論。課程內容期訓練學生數學運算、邏輯推演基本能力，亦培養多維空間觀念及思考方式，以便解決管理決策實務上多變數問題。

Management Mathematics (Linear Algebra) is fundamental to a large part of modern mathematics in management science field. This course focuses on a basic introduction to the concepts and techniques of linear algebra and some of its signification applications in management decision science.

課程進度大綱：

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| 1. Introduction to Management Mathematics | (2 hr) |
| 2. Review of topics in: Linear Systems, Matrices and Determinants | |
| Vector Spaces and Linear Transformation | (3 hr) |
| 3. MS Excel for Linear Algebra Solutions | (2 hr) |
| 4. Orthogonality and Least Squares | (6 hr) |
| 5. Eigenvalues and Eigenvector | (6 hr) |
| 6. Linear Differential Equations and Solutions | (6 hr) |
| 7. Optimization Methods | (4 hr) |

捌、講授方式：課堂講授

玖、教材課本與參考書籍 Text Books and Reference Books:

1. B. Kolman and D.R. Hill, Introductory *Linear Algebra: An Applied First Course*, 8th Ed., Prentice-Hall, 2005. (text book) (華泰代理，有中譯版)
2. G. Williams, *Linear Algebra with Applications*, 6th Ed., Jones & Bartlett, 2008. (text book: optional) (滄海代理，有中譯版)
3. Class Lecture Notes (自編教材講義)
4. 張保隆 著，現代管理數學（二版），華泰文化事業股份有限公司，2005.
5. 陳耀茂 著，管理數學（二版），五南圖書公司，2005.
6. 陳登源、林茂文、楊錦章 著，管理數學，雙葉書廊，2005.

成績考核方式：

期中考試	30%	作業（3-4 次）	20%
期末考試	30%	平時成績（實習課小考×3、點名）	20%

週次	課程內容	上課日期
1	Course Introduction: Requirement	2/17
2	Review: Linear Systems, Matrices, and Determinants	2/24
3	Vector Space and Linear Transformation	3/3
4	MS Excel for Linear Algebra Solutions	3/10
5	Orthogonality and Least Square: Inner Product Spaces	3/17
6	Orthogonal Transformation and Orthogonal Matrices	3/24
7	Spring Break	3/31
8	Gram-Schmidt Process and QR Factorization	4/7
9	Least Square Problems, Data Fitting and Approximation	4/14
10	Mid-term Exam	4/21
11	Eigenvalues and Eigenvector: Dynamic Systems	4/28
12	Eigenvalues and Eigenvector: Diagonalization	5/5
13	Eigenvalues and Eigenvector: Systems of Linear Differential Equations	5/12
14	Linear Differential Operators First-order and Higher-order Linear Differential Equations Systems of Linear Differential Equations	5/19
15	Linear Differential Equations and Series Solutions	5/26
16	Optimization Methods Introduction to Linear Programming, LP vs. Linear Systems	6/2
17	Optimization Methods Optimal Conditions and Lagrange Function	6/9
18	Final-term Exam	6/16

(教師可能視學習情形調整進度與內容)