國立東華大學

課　　綱　Course Outline

經濟學系學士班

中文課程名稱 Course Name in Chinese	經濟數學				
英文課程名稱 Course Name in English	Mathematics in Economics				
科目代碼 Course Code	EC__10200	班 別 Degree	學士班 Bachelor’s		
修別 Type	學程 Program	學分數 Credit(s)	3.0	時 數 Hour(s)	3.0
先修課程 Prerequisite	微積分（一）				

課程目標
Course Objectives

The course covers the mathematical structures commonly found in economics. It provides the
basic mathematical background needed in quantitative economic analysis. The main focus of the
course is the study of optimization theory (with and without differentiability) and its applications to
economics

系教育目標
Dept.’s Education Objectives

1	培育具專業知識與實務發展潛力的優秀經濟人才。 Educate students to be equipped with professional knowledge and empirical skills in economics

	系專業能力 Basic Learning Outcomes	課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.’s Education Objectives
A	數理分析能力：應用數學與賽局理論分析與解決經濟議題的能力。 Mathematical analysis skills: application of mathematical theories and game theory to analyze economic issues	●
B	實證經濟分析能力：善用資訊科技進行資訊蒐集、資料統計與計量分析 Empirical analysis skills: application of statistics and econometrics in data collection and examination	●
C	微觀經濟之闡釋能力：通曉個體經濟學相關的理論與應用。 Microeconomic perspective: understanding of microeconomic theories and relevant application	

D	宏觀經濟之闡釋能力：通曉總體經濟學相關的理論與應用。 Macroeconomic perspective: understanding of macroeconomic theories and relevant application	
E	樂活能力：具備適應現代社會的學養以及就業能力。 Employment opportunities: capabilities of working on important policy and decision challenges in business and government	

圖示說明Illustration ：● 高度相關 Highly correlated ○中度相關 Moderately correlated

課程大綱
Course Outline

1、Mathematical Preliminaries: Set Theory; Functions and correspondences; The space Rn;Convex and compact sets
2、Review of Linear Algebra: Vector space; Linear independence; Systems of equations;Quadratic forms; Characteristic values and vectors
3、Review of Differential Calculus: Differentiation; Derivatives; Taylor series; Implicit function
theorem
4、Optimization and the Existence of a Solution: Weierstrass theorem
5、Optimization and the Saddle Point Characterization: Lagrangean and Lagrange multipliers
6、Concave Optimization

資源需求評估（師資專長之聘任、儀器設備的配合・・・等）
Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)

課程要求和教學方式之建議
Course Requirements and Suggested Teaching Methods

本課程以講授方式進行。

其他
Miscellaneous