



課 綱 Course Outline  
經濟學系博士班國際組

中文課程名稱 Course Name in Chinese	財務工程				
英文課程名稱 Course Name in English	Financial Engineering				
科目代碼 Course Code	EC_D0190	班 別 Degree	博士班 Ph. D.		
修別 Type	選修 Elective	學分數 Credit(s)	3.0	時 數 Hour(s)	3.0
先修課程 Prerequisite					
課程目標 Course Objectives					
This course deals with portfolios of financial assets such as stocks and bonds. It explores the basic principles underlying rational portfolio choice and what these mean for prices determined in the marketplace					
系教育目標 Dept.'s Education Objectives					
1	培育具獨立學術研究與專業能力之優秀經濟人才。 Foster potential talents 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：通曉經濟學的高階理論技巧，應用數學與賽局解決經濟議題的能力 Mathematical analysis skills: Mastering in advanced application of mathematical theories and game theory in analyzing economic issues			○	
B	實證經濟分析能力：通曉經濟學的高階實證技巧，善用資訊科技進行資訊蒐集、資料統計與計量分析。 Empirical analysis skills: Mastering in advanced application of statistics and econometrics in data collection and examination				
C	微觀經濟之闡釋能力：通曉高階個體經濟學相關的理論與應用 Microeconomic perspective: Thorough understanding of advanced microeconomic theories and relevant application			○	

D	宏觀經濟之闡釋能力：通曉高階總體經濟學相關的理論與應用 Macroeconomic perspective: Thorough understanding of advanced macroeconomic theories and relevant application	
E	自我調整適應社會之能力：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	●
F	溝通表達能力：思路清晰，有能力與人溝通並撰寫高階專業研究報告 Communication skills: Having a clear mind and profound ability in presenting advanced professional academic research	

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

課程大綱  
Course Outline

- 1、Introduction to financial engineering
- 2、The institutional environment of financial engineering: financial markets
- 3、Multiple project selection with limited resources
- 4、Efficient portfolio construction
- 5、Choosing debt policy
- 6、Hedging stock/bonds/futures with options
- 7、Finding arbitrages
- 8、Using options to evaluate capacity decisions
- 9、Hedging streams of cash flows over time
- 10、Constructing asset and liability matches
- 11、Constructing synthetic securities to meet financial objectives
- 12、Models of Asset Price Behavior
- 13、The Black-Scholes Analysis
- 14、Risk Management of Options Positions

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

其他  
Miscellaneous