

# Course Description

Department of Mathematics

Nature of the course <input type="checkbox"/> required <input type="checkbox"/> elective		Area麻煩老師勾選類別，或直接填寫_____。 <input type="checkbox"/> 代數與數論 <input type="checkbox"/> 分析 <input type="checkbox"/> 幾何與拓樸 <input type="checkbox"/> 計算與應用數學 <input type="checkbox"/> 機率 <input type="checkbox"/> 統計 <input type="checkbox"/> 離散數學 <input type="checkbox"/> 其他 <input type="checkbox"/> 論文研討、獨立研究			
Calculus <input type="checkbox"/> Calculus A <input type="checkbox"/> Calculus B					
Course number		Section number	免填	Number of credits	
Course title	課程名稱： Functional Analysis 泛函分析				
Instructor	教授： 林太家				

## I. \* Contents :

- Linear Spaces
- Linear Maps
- Semigroup Theory

## II. Course prerequisite :

This is an advanced analysis course. Students should be familiar with Real, Complex and Fourier Analysis. The ability of writing rigorous mathematical arguments is required.

## III. \* Reference material ( textbook(s) ) :

- P. Lax, Functional Analysis
- W. Rudin, Functional Analysis
- J. B. Conway, A Course in Functional Analysis
- A. Pazy, Semigroups of Linear Operators and Applications to Partial Differential Equations

## IV. \* Grading scheme : 請填寫各項計分之百分比，例如：期中 30% 期末 40% 作業 10% 報告 20%，總計 100%

- Midterm 1: 30%
- Midterm 2: 30%
- Final: 40%

## V. \* Course Goal :

The goal is to introduce basic theories of Functional Analysis. The course is divided into three parts. The first part is for Linear Spaces including Hahn-Banach, Lax-Milgram, duality and weak convergence Theorems. The second part is for Linear Maps including Open mapping, spectral and Gelfand Theorems. The third part is for Semigroup and Scattering Theorems.

1. \*號為必填欄位
2. 大綱內容字數英文最少 200 字以上