課程大綱及進度表

開課系所	數學系
開課學年	110 學年度
開課學期	1
課程名稱(中文)	泛函分析（一）
課程名稱（英文）	Functional Analysis (I)
課程碼	L170210
分班碼	
先修科目或先備能力	初等分析和偏微分方程
學分數	3
開課教師	方永富
e-mail	yffang@mail.ncku.edu.tw
電話	275-7575 轉 65131
Office Hours	Mon, Thu: 12:10 - 13:00, and plus appointments

課程概述　本課程介紹泛函分析的基本要素。我們將著重 Sobolev 空間 及線性算子理論. 我們將討論 Hahn-Banach theorem, principle of uniform boundedness 及 open mapping theorem. 我們也將討論 Riesz theory 及 Fredholm theory.
We study some basic elements of functional analysis including some operator theory. The main objects in this course are Sobolev spaces and linear operators. We will discuss the Hahn-Banach theorem, the principle of uniform boundedness and open mapping theorem. Also, Riesz theory and Fredholm theory will also be discussed.

教學目標　We expect to grab the basic idea and concept of Constructive mathematics in modern mathematical language, Function spaces, and operators. Then we learn various properties of them from different aspects.

授課課程大綱明細
Ch1: Banach Contraction Fixed Point Theorem
Ch2: Banach Spaces
Ch3: Hilbert Spaces
Ch4: Midterm exam.
Ch5: Hahn–Banach Theorem
Ch6: Principle of Uniform Boundedness
Ch7: Open Mapping Theorem
Ch8: Differential and Integral Calculus in Banach Spaces
Ch9: Spectral Theory with Applications
Ch10: Final Exam.

參考書目　Functional Analysis and Applications, Abul Hasan Siddiqi, 2019, 1, 978-981-10-3725-2, Springer

課程要求	Real Analysis and Partial Differential Equations
評量方式	Homework: 40% Final: 60%
課程網址	http://www.math.ncku.edu.tw/~fang
助教資訊	
備註	