



# 課 綱 Course Outline

## 應用數學系博士班

|                                                                                                 |                                                                                                                                |                             |                  |                                                                                         |                |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------|-----------------------------------------------------------------------------------------|----------------|
| 中文課程名稱<br>Course Name in Chinese                                                                |                                                                                                                                | 高等機率論                       |                  |                                                                                         |                |
| 英文課程名稱<br>Course Name in English                                                                |                                                                                                                                | Advanced Probability Theory |                  |                                                                                         |                |
| 科目代碼<br>Course Code                                                                             |                                                                                                                                | AM__70900                   | 班 別<br>Degree    | 博士班<br>Ph. D.                                                                           |                |
| 修別<br>Type                                                                                      |                                                                                                                                | 選修<br>Elective              | 學分數<br>Credit(s) | 3.0                                                                                     | 時 數<br>Hour(s) |
| 3.0                                                                                             |                                                                                                                                |                             |                  |                                                                                         |                |
| 先修課程<br>Prerequisite                                                                            |                                                                                                                                | 高等微積分<br>Advanced calculus  |                  |                                                                                         |                |
| 課程目標<br>Course Objectives                                                                       |                                                                                                                                |                             |                  |                                                                                         |                |
| 建立以測度論為基礎的機率學架構 並建立重要收斂定理<br>Measure theory based probability theory with major limit theorems. |                                                                                                                                |                             |                  |                                                                                         |                |
| 系教育目標<br>Dept.'s Education Objectives                                                           |                                                                                                                                |                             |                  |                                                                                         |                |
| 1                                                                                               | 訓練嚴謹思考與推理能力。<br>To provide a solid training in rigorous thinking and reasoning ability.                                        |                             |                  |                                                                                         |                |
| 2                                                                                               | 奠定理論與應用數學的基礎知識。<br>To establish well-founded background knowledge in pure and applied mathematics.                             |                             |                  |                                                                                         |                |
| 3                                                                                               | 具備跨領域學習能力。<br>To prepare the students for interdisciplinary study in the future.                                               |                             |                  |                                                                                         |                |
| 系專業能力<br>Basic Learning Outcomes                                                                |                                                                                                                                |                             |                  | 課程目標與系專業能力相關性<br>Correlation between Course Objectives and Dept.'s Education Objectives |                |
| A                                                                                               | 具備專業知識及邏輯推理能力<br>Have well-founded expertise and be capable of logical reasoning.                                              |                             |                  | ●                                                                                       |                |
| B                                                                                               | 具備學習其它學科的能力，以期能邁向跨領域研究。<br>Be able to study other fields of science so as to conduct interdisciplinary research in the future. |                             |                  | ●                                                                                       |                |
| C                                                                                               | 具備獨立思考與解決問題的能力。<br>Be capable of independent thinking and have the problem-solving skills.                                     |                             |                  | ●                                                                                       |                |
| 圖示說明Illustration：● 高度相關 Highly correlated ○中度相關 Moderately correlated                           |                                                                                                                                |                             |                  |                                                                                         |                |
| 課程大綱                                                                                            |                                                                                                                                |                             |                  |                                                                                         |                |

## Course Outline

1. 測度論
2. 積分論
3. 獨立性
4. 大數法則
5. 中央極限定理

1. Measure theory
2. Integration theory
3. Independence
4. Law of large numbers
5. Central limit theorems

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.)

本系（所）專任或兼任教師  
Taught by department' s faculty member.

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

演講、習題、考試  
Lectures, problem sets and examinations.

其他  
Miscellaneous

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