



## 教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	高等機率論AB		學年/學期 Academic Year/Semester	112/2	
課程名稱(英文) Course Name in English	Advanced Probability Theory				
科目代碼 Course Code	AM_5390AB	系級 Department & Year	碩士	開課單位 Course-Offering Department	應用數學系
修別 Type	必修 Required	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/王家禮				
先修課程 Prerequisite					
課程描述 Course Description					
This course is a graduate course in probability theory for students who have taken elementary probability and advance calculus. Random variables and probability are re-visited in the framework of measure theory and algebra space. This framework puts the whole field of probability and statistics on a mathematical rigorous foundation					
課程目標 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 Measure theory based probability theory with major limit theorems.					
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	具備專業數學知識及邏輯推理能力。Have well-founded expertise in mathematics 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。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。 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					
授課進度表 Teaching Schedule & Content					
週次Week	內容 Subject/Topics			備註Remarks	
1	Review of basic measure theory				
2	Probability space				
3	Probability space				
4	Random variable				
5	Random variable				
6	Expected value				
7	Different modes of convergence				

8	Different modes of convergence	
9	期中考試週 Midterm Exam	
10	Law of large numbers	
11	Law of large numbers	
12	Central limit theorem	
13	Conditional probability and Expectation	
14	Conditional probability and Expectation	
15	Martingales	
16	Martingales	
17	Probability inequality	
18	期末考試週 Final Exam	

### 教學策略 Teaching Strategies

- 課堂講授 Lecture
  分組討論 Group Discussion
  參觀實習 Field Trip  
 其他 Miscellaneous:

### 教學創新自評 Teaching Self-Evaluation

#### 創新教學 (Innovative Teaching)

- 問題導向學習 (PBL)
  團體合作學習 (TBL)
  解決導向學習 (SBL)  
 翻轉教室 Flipped Classroom
  磨課師 Moocs

#### 社會責任 (Social Responsibility)

- 在地實踐 Community Practice
  產學合作 Industry-Academia Cooperation

#### 跨域合作 (Transdisciplinary Projects)

- 跨界教學 Transdisciplinary Teaching
  跨院系教學 Inter-collegiate Teaching

- 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

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學期成績計算及多元評量方式 Grading & Assessments

配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗 會考	實作 觀察	口頭 發表	專題 研究	創作 展演	卷宗 評量	證照 檢定	其他
平時成績(含出缺席) General Performance (Attendance Record)									
期中考成績 Midterm Exam	30%								
期末考成績 Final Exam	30%								
作業成績 Homework and/or Assignments	40%								
其他 Miscellaneous (_____)									

評量方式補充說明

Grading & Assessments Supplemental instructions

教科書與參考書目 (書名、作者、書局、代理商、說明)

Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

Lecture Notes

Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

A Second Course in Probability, S. M. Ross, E. A. Pekoz

課程教材網址(含線上教學資訊, 教師個人網址請列位於本校內之網址)

Teaching Aids & Teacher's Website(Including online teaching information.  
Personal website can be listed here.)

其他補充說明 (Supplemental instructions)