國立東華大學

課　綱　Course Outline

應用數學系統計碩士班

中文課程名稱 Course Name in Chinese	機率專論(一)				
英文課程名稱 Course Name in English	Topics in Probability (I)				
科目代碼 Course Code	AM__61400	班　別 Degree	碩士班 Master's		
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 is an introduction to stochastic inequalities and comparison methods for establishing the inequality. My goal is to develop students' intuition, which, hopefully, will enable students to think inequality probabilistically.

系教育目標 Dept.'s Education Objectives	
1	訓練嚴謹思考與推理能力。 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。 To establish well-founded background knowledge in pure and applied mathematics.
3	具備跨領域學習能力。 To prepare the students for interdisciplinary study in the future.

	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	具備專業機率、統計知識與應用分析能力。 Have well-founded expertise in probability and statistics, and good analytical ability in solving real problems.	●
B	具備程式設計與統計計算能力。 Have the computer programming and statistical computing skills.	○
C	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.	○

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

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We will start with two popular orderings between random variables: stochastic ordering and variability ordering. We then talk about an important inequality concept between life distributions that is based on notions of aging. These inequalities and orderings will also be extended carefully to random vectors. In the second part of the course, we move to introduce a few common comparison methods for establishing stochastic inequalities between stochastic models. Those include functional method, mapping method and sample-path method. If time is allowed, we will further introduce another useful comparison tool, the coupling method, which plays a crucial role in modern applied probability.
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.)
本系專、兼任教師，相關硬軟體。
課程要求和教學方式之建議 Course Requirements and Suggested Teaching Methods
針對研究生未來論文研究所需之背景知識，由任課教師規劃系列專書、論文，共同研讀討論。
其他 Miscellaneous
撰寫人：應用數學系 王家禮 撰寫日：100年4月