



課 綱 Course Outline  
應用數學系博士班

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| 中文課程名稱<br>Course Name in Chinese   | 存活分析   |                  |               |   |     |
| 英文課程名稱<br>Course Name in English   | Survival Analysis  |                  |               |   |     |
| 科目代碼<br>Course Code  | AM_73700   | 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   | 無。   |                  |               |   |     |
| 課程目標<br>Course Objectives  |  |                  |               |   |     |
| <p>應用統計學者常常面臨「到事件發生所需時間」的問題 這類數據出現在許多不同領域裡 如醫學 生物 公共衛生 工程 與經濟等 其中主要的一個關鍵是反應變數有可觀擴散與右檢機制 本課程目標是對存活分析做一精確的敘述</p> <p>A problem frequently faced by applied statisticians is the analysis of time-to-event data. Examples of this data arise in diverse fields, such as medicine, biology, public health, engineering economics, etc. The essential element is the presence of a response with appreciable dispersion and often with right censoring. The object of this course is to give a concise account of the analysis of survival data.</p> |  |                  |               |   |     |
| 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. |                  |               | ●   |     |

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| 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<br>Course Outline  |  |   |
| 一 存活分析的範疇<br>二 折損時間之分佈<br>三 參數統計分析<br>四 無母數方法<br>五 對解釋變數之倚賴<br>六 自我一致性與EM algorithm<br>1.The scope of survival analysis.<br>2.Distributions of failure time.<br>3.Parametric statistical analysis.<br>4.Non-parametric methods.<br>5.Dependence on explanatory variables.<br>6.Self-consistency and the EM algorithm. |  |   |
| 資源需求評估（師資專長之聘任、儀器設備的配合．．．等）<br>Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)   |  |   |
| 由本系專任教師任教<br>Taught by department' s faculty member.  |  |   |
| 課程要求和教學方式之建議<br>Course Requirements and Suggested Teaching Methods  |  |   |
| 講課、習題、考試<br>Lecture, problem sets and examinations.   |  |   |
| 其他<br>Miscellaneous   |  |   |
| 撰寫人：應用數學系 謝思民<br>撰寫日：100年4月   |  |   |