



課 綱 Course Outline
應用數學系博士班

| | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------|---------------|-----------------------------------------------------------------------------------------|-----|
| 中文課程名稱 Course Name in Chinese | 廣義統計線性模型 | | | | |
| 英文課程名稱 Course Name in English | Generalized Linear Models | | | | |
| 科目代碼 Course Code | AM_73000 | 班 別 Degree | 博士班 Ph. D. | | |
| 修別 Type | 選修 Elective | 學分數 Credit(s) | 3.0 | 時 數 Hour(s) | 3.0 |
| 先修課程 Prerequisite | 高等統計學、統計線性模型 Advanced Statistics, Applied Linear Models | | | | |
| 課程目標 Course Objectives | | | | | |
| <p>類別資料廣泛出現在生物醫學、民意調查、商業及社會科學研究領域。廣義線性模型正是處理這類資料的重要統計方法。這門課將有系統地介紹常用的廣義線性模型之建構、相關參數估計、推論以及詮釋等主題。希冀學生修完後，對標準的類別資料可以分析處理詮釋；對結構較為特殊的資料，能夠參考文獻，修正現行方法而提出方向正確的建議。</p> <p>Categorical variables are present in many application fields such as biomedical science, sample survey, social science and business. Generalized Linear Model is the dominating statistical method for data sets arising from these subject fields. Both theoretical and application aspects of Generalized Linear Model will be discussed. Also implementation, interpretation and implication for GLIM statistical analysis will be addressed.</p> | | | | | |
| 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 | 具備專業知識及邏輯推理能力 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。 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

課程大綱
Course Outline

Course Overview, Sketch of Generalized Linear Model
Taxonomy, Contingency Tables
Models for Binary Response Variables, Logit models
Loglinear Models
Fitting Loglinear and Logit Models,
Building and applying Loglinear models

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.)

統計專長專任教師、統計計算軟體以及硬體支援。
Faculty with expertise in statistics, statistical computing and hardware supports

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

上課方式以講授、問答、報告及討論為主。將進行中型實際資料分析並指定若干教材於課堂報告。進度大致如上所述，但將依同學接收程度酌量調整。
Some possible topics/problems for group projects will be announced early in the class. These projects will be integrated with lectures, data analysis, class discussion and presentation. The statistical freeware R will be used for data analysis.

其他
Miscellaneous

撰寫人：應用數學系 曹振海
撰寫日：100年4月