



教學計劃表 Syllabus

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| 課程名稱(中文) Course Name in Chinese | 高等統計學AA | | 學年/學期 Academic Year/Semester | 112/1 | |
| 課程名稱(英文) Course Name in English | Advanced Statistics | | | | |
| 科目代碼 Course Code | AM_5360AA | 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 | /謝思民 | | | | |
| 先修課程 Prerequisite | | | | | |
| 課程描述 Course Description | | | | | |
| 統計推論之基礎課程 以測度論的數學語言發展理論架構 處理點估計問題相關各層面 Basic course for statistical reasoning. Develops the theoretical framework in terms of measure theory. Treats various aspects of the point estimation problem | | | | | |
| 課程目標 Course Objectives | | | | | |
| 點估計理論 Theory of point estimation | | | | | |
| 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 | | | | | |
| 授課進度表 Teaching Schedule & Content | | | | | |
| 週次 Week | 內容 Subject/Topics | | | 備註 Remarks | |
| 1 | 介紹測度論 積分論 及收斂定理 Introducing measure theory, integration theory and convergence theorems | | | | |
| 2 | 與機率論之關係 Relating to probability theory | | | | |
| 3 | 指數家族分佈 Exponential families of distributions | | | | |
| 4 | 充分性與最少充分性 Sufficiency and minimal sufficiency | | | | |
| 5 | 延續上週 Continuation | | | | |
| 6 | 輔助性 完備性 與充分性 Ancillarity, completeness and sufficiency | | | | |
| 7 | 凸損失函數 Convex loss functions | | | | |

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| 8 | UMVU 估計量 UMVU estimators | |
| 9 | 期中考試週 Midterm Exam | |
| 10 | UMVU 估計量 UMVU estimators | |
| 11 | 信息不等式 Information inequality | |
| 12 | 機率收斂性 與分佈收斂性 Convergence in probability and in distribution | |
| 13 | 延續上週 Continuation | |
| 14 | 漸進效率性 Asymptotic efficiency | |
| 15 | 最大概似估計量 與效率性 Maximum likelihood estimators and efficiency | |
| 16 | asymptotic confidence intervals | |
| 17 | EM algorithms. | |
| 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: 講課 習題 考試 Lectures, problem sets and examinations

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:

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 General Performance | | | | | | | | | |
| 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.)

Textbook : Lehmann and Casella, "Theory of point estimation".

Reference: Casella and Berger, "Statistical inference".

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)