

 國立東華大學
教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	迴歸分析AB			學年/學期 Academic Year/Semester	114/2
課程名稱(英文) Course Name in English	Regression Analysis				
科目代碼 Course Code	AM__4030AB	系級 Department & Year	學三	開課單位 Course-Offering Department	應用數學系
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)		3.0/3.0	
授課教師 Instructor	/曾玉玲				
先修課程 Prerequisite	/#統計學/#基礎機率/#數理統計學(一)				
課程描述 Course Description					
統計方法在各應用領域中具有極重要的地位，其中線性模型、分析更被廣泛引用。本課程將介紹、探討線性模型中最基本、重要的迴歸模型及其相關分析理念。由簡單線性模式出發，探討迴歸分析中的推論問題、模型的檢驗；進而介紹多重迴歸模型與其推論、分析方法。模型的適切性的探討與模型的選取方法亦是要強調的重點課題之一。透過理論的探討及資料分析，建立統計理論及實際操作的連結。 上課方式以講授、問答及討論為主。鼓勵學生在上課時多提出問題及對理論的見解及詮釋。使用 R 統計分析軟體進行實作。					
課程目標 Course Objectives					
迴歸分析在應用領域中具有極重要的地位。本課程由簡單線性模式出發，探討Multiple Linear Regression, ANOVA, ACOVA, Mixed Model 及實驗設計。透過理論的探討及資料分析，建立統計理論及實際操作的基礎。Regression is one of the most widely used statistical methods in application. We will cover simple linear regression, multiple regression, ANCOVA and (if time permits) mixed model. Through discussion and lectures on theoretical, data-analysis aspects of regression, we will lay good foundation for future advancement.					
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	具備基本數學知識及邏輯推理能力。Have well-founded background in mathematics and be capable of logical reasoning.				●
B	具備學習數學相關領域的預備知識。Be knowledgeable about fields related to mathematics.				○
C	具備軟體應用與科學計算能力。 Be able to use mathematics software and scientific computation skill in problem-solving.				●
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	Overview				
2	Simple Linear Regression: Introduction				
3	Simple Linear Regression：Inferences				

4	Simple Linear Regression : Inferences (conti.)	
5	Simple Linear Regression : Diagnostics for Simple Linear Regression	
6	Multiple Regression : Matrix Notation	
7	Multiple Regression : Gauss-Markov Theorem	
8	Multiple Regression : Inferences for Multiple Regression	
9	期中考試週 Midterm Exam	
10	Model Diagnostics : Basic idea for model diagnostics	
11	Model Diagnostics : Various residual plots, Normal Q-Q plot, etc (conti.)	
12	Model Diagnostics : Various residual plots, Normal Q-Q plot, etc (conti.)	
13	Model Diagnostics : Various residual plots, Normal Q-Q plot, etc (conti.)	
14	Model Diagnostics : Various residual plots, Normal Q-Q plot, etc (conti.)	
15	Model Diagnostics : Various residual plots, Normal Q-Q plot, etc (conti.)	
16	Bridge to ANOVA : One-way, Two-way ANOVA.	
17	Model selection, if time permits.	
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: 不收遲交作業

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(含出缺席) General Performance (Attendance Record)									
期中考成績 Midterm Exam	30%	✓							
期末考成績 Final Exam	50%	✓	✓						
作業成績 Homework and/or Assignments	20%		✓						其中10%由各組代表 一人到助教處講解 一題用到R習題計算
其他 Miscellaneous (期末考(50%；課堂考 30%、上機考20%))									
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.) 課本: Applied Linear Statistical Models, Applied Linear Regression Models, 5th ed, Kutner, Nachtsheim, Neter and Li, 2019, McGRAW-HILL International. 洽華泰書局 周益彰 先生 (0910-275877) 參考書目: - Applied Regression Analysis, 2nd ed, Draper, N. R. and Smith, H., 1981, Wiley. - Introduction to Linear Regression Analysis, 2nd ed, Montgomery, D. C. and Peck, E., 1991, Wiley.									
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.) 課程網頁 http://faculty.ndhu.edu.tw/~yltseng/edu/reg_2026.html									
其他補充說明 (Supplemental instructions)									