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## ②图玄束華大學

# 教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	應用統計線性模型AA				學年/學期 Academic Year/Semester		107/1
課程名稱(英文) Course Name in English	Applied Statistical Linear Models						
科目代碼 Course Code	AM5150AA	系級 Department 碩士 & Year		開課單位 Course-Offering Department	應用數學系		
修別 Type	選修 Elective	學分數/時間 Credit(s)/Hour(s)			3.0/3.0		
授課教師 Instructor	/吳韋瑩						
先修課程 Prerequisite							

#### 課程描述 Course Description

The goal of this course is to introduce the basic linear regression models through theoretical results and computation studies.

#### 課程目標 Course Objectives

Applied linear models for regression, analysis of variance and experimental design are widely used in various application domains. Starting with the simple linear models, we will cover the main topics in linear statistical models such as multiple linear regressions, ANOVA, logistic regression, etc. Students will be exposed to both theoretical and practical aspects of applied linear models. Selected topics such as statistical machine learning, variable selection and PCA will also be briefly addressed if time permits.

	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.	•
В	具備程式設計與統計計算能力。Have the computer programming and statistical computing skills.	0
С	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.	0

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	What's linear regression models? Review basic statistical and probability concepts	
2	Simple linear regression model & Least Square estimator and Its properties.	
3	Least Square estimator and Its properties. Software Application	
4	Inferences in Regression. Software Application	
5	Review of Matrix properties	
6	<ol> <li>Matrix Approach for Simple linear regression model</li> <li>Analysis of Variance</li> </ol>	

7	Diagnostics and Remedial Measures				
8	Midterm				
9	Review of Matrix properties				
10	Multiple linear regression model & Least Square estimator				
11	1. Multiple linear regression model 2. Least Square estimator and Its properties.				
12	Least Square estimator and Its properties. Inferences in Regression.				
13	Software Application				
14	Model Selection criteria				
15	The criteria of model Selection				
16	High dimensional linear model I				
17	High dimensional linear model II				
18	Final exam				
教 學 策 略 Teaching Strategies					
→ 課堂講授 Lecture 分組討論Group Discussion 参觀實習 Field Trip					
其他Miscellaneous:					
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)					
────────────────────────────────────					
— — — — — — 社會責任(Social Responsibility)					
在地實踐Community Practice     產學合作 Industy-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	配分比例	多元評量方式 Assessments							
Items	Percentage	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	10%								
期中考成績 Midterm Exam	30%								
期末考成績 Final Exam	10%								
作業成績 Homework and/or Assignments	25%								
其他 Miscellaneous	25%								

評量方式補充說明

Grading & Assessments Supplemental instructions

Homework: Please note that the work you turn in must be your own. Late homework will not be permitted. The deadline of assignment will be announced late.

Quizzes: Quiz will be given in every other week. It will be closed book/closed notes.

The final exam: The final exam is temporarily scheduled on January 3rd 2017

The exact schedule of quizzes and exams will be mentioned in the class. An unexcused, missed examination will be counted as a zero.

- \*Make-up examination and quizzes is not agreed without any legitimate reason. Please contact the instructor with excuses before the exam or quiz.
- \*Importance: The instructor reserves the right to make any changes he considers academically advisable. Changes will be announced in the class. It is your responsibility to keep up with any changed policies.

### 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: Applied Linear Regression Models, Kutner, Nachtsheim, Neter, 4th Edition.

Other References:

Mathematical statistics by Jun Shao.

Regression Analysis by Example by Samprit Chatterjee and Ali S. Hadi .

Linear Regression Analysis by George A.F. Seber and Alan J. Lee.

課程教材網址(教師個人網址請列在本校內之網址)

Teaching Aids & Teacher's Website (Personal website can be listed here.)

其他補充說明(	Supplemental	instructions)