



## 教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	統計學AA		學年/學期 Academic Year/Semester	102/2	
課程名稱(英文) Course Name in English	Statistics				
科目代碼 Course Code	AM_2110AA	系級 Department & Year	學二	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	/曹振海				
先修課程 Prerequisite	/#基礎機率				
課程描述 Course Description					
<p>統計學是介紹統計方法論一系列課程的入門課。近年來，各學門研究領域逐漸重視並引進統計方法的應用。但如果對所使用的統計方法理論背景與意義沒有充分的認識跟瞭解，則難免會誤用這些方法、進而做出不適當的結果詮釋。因此，在強調應用統計之際，更應注意統計理論的重要性。本課程主要目的是以深入淺出的方式介紹基礎統計分析方法：基本敘述統計分析與統計推論方法（包含點估計、檢定及區間估計等重要統計議題），希望建立初學者對各方法之建立與發展適當的直覺，以資其日後研習統計方法學的進一步理論探討或應用之基礎。</p> <p>上課方式以講授、問答及討論為主。統計學中的基本觀念瞭解及對方法的直覺及詮釋將尤其被強調。鼓勵同學用統計軟體 R 來了解敘述統計分析方法的實際操作。進度大致如課程計畫所述。</p>					
課程目標 Course Objectives					
<p>本課程之目標在幫助應數系同學能熟悉統計學之基本概念及理論發展，期能將統計推論的概念與方法應用於後續課程及學術研究中。課程設計以基礎機率為基礎，內容包括統計學簡介、敘述統計、參數估計、假設檢定、卡方檢定、迴歸分析及變異數分析等重要主題之理論與應用。</p> <p>The objective of this course is to help students learn the basic concepts and the theoretical development in statistics, and get necessary background to apply concepts and methods in statistics to subsequent courses and academic research. The preliminary for this course is Introduction to Probability. The content includes theory and application in the following important topics: introduction to statistics, descriptive statistics, parameter estimation, hypothesis testing, chi-square test, regression analysis, and analysis of variance.</p>					
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	具備機率、統計及相關領域的知識與應用能力。Have the knowledge of probability and statistics and the related field, and the corresponding application ability.				●
C	具備軟體應用與統計計算能力。 Be able to use computer software for statistical computation in real applications.				●
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	Review of Probability I				

3	Review of Probability II	
4	Descriptive Statistics and Exploratory Data Analysis	
5	Formulation of Problems of Statistics	
6	Point Estimation: Objectives of estimating the parameters	
7	Methods of Point Estimation	
8	Confidence Intervals for means	
9	期中考試週 Midterm Exam	
10	Other Confidence Intervals	
11	Hypothesis Tests I	
12	Hypothesis Tests II	
13	Nonparametric Methods I	
14	Nonparametric Methods II	
15	Bayesian Methods	
16	Selected Topics (if time permits) such as regression	
17	Review	
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:

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	10%	✓		✓					
期中考成績 Midterm Exam	30%	✓							
期末考成績 Final Exam	40%	✓							
作業成績 Homework and/or Assignments	20%								
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.)

課本：Hogg and Tanis (2014). Probability and Statistical Inference. 8th Edition, Prentice-Hall [華泰書局]

參考書目：

1. Johnson and Bhattacharyya (2006). Statistics: Principles and Methods. 5 Edition. Wiley.
2. Casella and George (2001). Statistical Inference. 2nd Edition. Duxbury Press-Wadsworth.

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.)

<http://faculty.ndhu.edu.tw/~chtsao/edu/14/stat/stat.html>

其他補充說明 (Supplemental instructions)