國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	統計軟體與實務應用			學年/學期 Academic Year/Semester	114/2
課程名稱(英文) Course Name in English	Statistical Software and Practical Application				
科目代碼 Course Code	DS__10110	系級 Department & Year	學二	開課單位 Course-Offering Department	大數據科學國際學士班
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					

課程描述 Course Description

統計是資料科學的一個重要主軸。除了傳統的統計理論課程內容，統計軟體的了解以及與實際問題的接軌，對學生的學習、提高動機乃至後續職涯發展都有關鍵的影響。
本課程將介紹統計軟體 R， Rstudio, R Bloggers, Github, Kaggle 等資料科學中常使用、相關的軟體與網站聚落。

Statistics is one of the main cornerstone of data science. The data project hand-on experience supplements the theory learning and gives the students higher motivation and better orientation. In this course, we will introduce statistical computation environments, such as R. Rstudio, Rbloggers, Github, Kaggles and some statistical computing apps as well as popular ecosystems.

課程目標 Course Objectives

本課程在使學生了解如何借助統計軟體以整理資料、繪製統計圖表、進行基本的統計分析等實務工作。

The objective is to help students understand how to utilize statistical software in practical applications such as data management, plotting statistical graphs/tables, basic statistical analysis, and statistical computation.

	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	具備基本資料科學知識及邏輯推理能力。have well-founded background in data science and logical reasoning,	○
B	具備機率、統計、資料科學及相關領域的知識與應用能力。have the knowledge of probability , statistics , data science and the related fields, and their applications,	●
C	具備資料科學應用技能與團隊合作，解決問題能力。be able to utilize data scientific skills for problem solving through cooperation and teamworking.	●

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	1. Why R? 1.1. A quick guide to R bloggers, R, Rstudio 1.2. Installation and playing around R and R studio	

2	2. Playing with Data 2.1. Data Import 2.2. Data: Look and feel 2.3. Summary of numbers: graphical summaries and numerical summaries	
3	3. Data Analysis I. 3.1. What's DA? What's DA for? 3.2. Modules of data analysis 3.3. Some examples	
4	4. Data Analyses II. 4.1. DA and Data Science 4.2. Data and the real-world problem 4.3. Statisticians and Data Scientists	
5	5. Statistics I. Statistical ways of understanding data 5.1. Sample and population 5.2. Statistical models: Random variables: distribution, pdf/pmf. 5.3. Simulation and Random number generation	
6	6. Statistics II. Statistical way of answering practical questions 6.1. What is the main features of the population based on the (sample) data? 6.2. What is the possible range of the feature (of concern)? 6.3. Is this feature significantly better?	
7	6. Statistics II. Statistical way of answering practical questions	
8	5. Data Analysis III. Kaggle Game	
9	期中考試週 Midterm Exam	
10	6. Data Analysis IV: Prep for Kaggle	
11	7. Data Analysis V: Team learning Sample kaggle data analysis	
12	8. Statistics III. Regression	
13	9. Statistics IV. Classification	
14	10. Machine Learning I	
15	10. Machine Learning II	
16	Team Presentation	
17	Team Presentation	
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:

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 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 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)	20%		✓	✓	✓				
期中考成績 Midterm Exam	30%	✓			✓				
期末考成績 Final Exam	50%	✓		✓	✓				包含期末小組資料分析報告/ Including the team data project analysis, presentation and report.
作業成績 Homework and/or Assignments									
其他 Miscellaneous (_____)									

評量方式補充說明
Grading & Assessments Supplemental instructions

小組資料分析報告:
Proposal
Progress Reports
Oral Presentation
Written Report

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.)

Google Classroom:
Google Meet:
課程網頁：https://chtsao.gitlab.io/rgame26/

其他補充說明 (Supplemental instructions)