課程資訊 (Course Information)					
科號 Course Number	10810COM 525000	學分 Credit	3	人數限制 Class Size	40
中文名稱 Course Title	統計學習				
英文名稱 Course English Title	Statistical Learning				
任課教師 Instructor	洪樂文(YAO-WIN HONG) *more information*				
上課時間 Time	R2R3R4	上課教室 Room	DELTA台達209		

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此科目對應之系所課程規畫所欲培養之核心能力 Core capability to be cultivated by this course	■ 發掘、分析、解決問題與獨立研究之能力 (60%) The ability to discover, analyze, solve problems and to research independently. (60%) ■ 通訊科技整合與創新之能力 (20%) The ability to integrate and innovate communication technology. (20%) ■ 學習新知識與技術之能力 (20%) The ability to learn new knowledge and techniques. (20%) □ 良好溝通、表達與外語能力 The ability to communicate and express oneself effectively and to be proficient in foreign languages. □ 具團隊精神及遵守專業倫理 The ability to possess team spirit and to comply with professional ethics.

課程簡述 (Brief course description)

Statistical learning refers to a set of tools for modeling and understanding complex datasets. It is a recently developed area in statistics and blends with parallel developments in data science and machine learning. With the explosion of big-data problems, statistical learning has become a very hot field in many scientific areas as well as marketing, finance, and other business disciplines. In this course, we will teach students statistical learning techniques and tools so that they can analyze their data.

課程大綱 (Syllabus)

Course keywords:
machine learning, data mining, linear regression, classification, decision trees, support vector machines, unsupervised learning

一、課程說明(Course Description)

This is an introductory course to statistical learning, a recently developed area in statistics with parallel developments in data science and machine learning. With the explosion of big-data problems, statistical learning has become a very hot field in many scientific areas as well as marketing, finance, and other business disciplines. In this course, we will teach students statistical learning techniques and tools so that they can analyze their data.

二、指定用書(Text Books)

Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani, "An Introduction to Statistical Learning with Applications in R," Springer, 2013.

三、參考書籍(References)

Trevor Hastie, Robert Tibshirani and Jerome Friedman, "The Elements of

Statistical Learning Data Mining, Inference, and Prediction," second edition, Springer, 2009.

四、教學方式(Teaching Method)

3-hour lecture per week

五、教學進度(Syllabus)

1. Statistical learning
2. Linear regression
3. Classification
4. Resampling methods
5. Linear model selection and regularization
6. Polynomial regression
7. Tree-based methods
8. Support vector machines
9. Unsupervised learning

六、成績考核(Evaluation)

30% Homework
35% Midterm
35% Final Exam

七、可連結之網頁位址

To be determined.