社會資料分析與應用入門 課程大綱
Introduction to Social Data Analytic and Its Applications

課程時間：2022.10.14~11.18（星期五）09:00-12:00

日期	單元	課程簡述
10 月 14 日	1	Pre-class: 　- Bring own device (Windows 10 or MacOS, no tablets) 　- All software/applications used in this class are open-sourced 　- Programming in cloud platforms (RStudio cloud, Google Colab) 　- Recommended accounts: GitHub 資料科學綜覽/INTRODUCTION TO DATA SCIENCE: an overview 　a. What is Big Data? 　b. Theory of Data Generation
	2	資料科學綜覽/INTRODUCTION TO DATA SCIENCE: an overview 　c. How to equip for data scientist
	3	資料科學綜覽/INTRODUCTION TO DATA SCIENCE: an overview 　d. Tools for professional data scientists
10 月 21 日	4	Pre-class: 　- Install R, RStudio, Python and Jupyter Notebook 　- GitHub account 程式編寫的基礎/DATA PROGRAMMING BASICS – an introduction to the most commonly used programming languages in Data Science: Python, R and SQL 　a. How to start programming? 　b. Best programming practices
	5	程式編寫的基礎/DATA PROGRAMMING BASICS 　c. IDE (Integrated Development Environment) 　d. Python programming basics 　　• Hands-on: use Python to download social media data
	6	程式編寫的基礎/DATA PROGRAMMING BASICS 　e. R programming basics 　　• Hands-on: Build visualization dashboard 　f. SQL and database 　　• Hands-on: database management system on database server
10 月 28 日	7	資料蒐集方法/DATA COLLECTION METHODS – Introducing different data collection methods from small data (e.g. surveys, interview) to big data (e.g. social media, web data) 　a. Made data and Found data 　b. Data generation and data structure
	8	資料蒐集方法/DATA COLLECTION METHODS 　c. Designing data collection scheme
	9	資料蒐集方法/DATA COLLECTION METHODS 　d. API and non-API methods
11 月 4 日	10	資料視覺化/DATA VISUALIZATION –

		This course module covers basic theory of data visualization and emphasizes hands-on training in building charts and development data visualization applications. a. Cognitive science of data visualization b. Visual thinking
	11	資料視覺化/DATA VISUALIZATION c. Exploratory Data Analysis • Form follows functions, chart follows data types
	12	資料視覺化/DATA VISUALIZATION d. Reactive and Interactive charts and applications
11 月 11 日	13	資料庫簡介/INTRODUCTION TO DATABASE – Introducing database concepts and systems, with hands-on database management practices and maintenance a. Relational database b. Entity-Relation Model (ERM)
	14	資料庫簡介/INTRODUCTION TO DATABASE c. Build database server
	15	資料庫簡介/INTRODUCTION TO DATABASE d. Database management and applications

11 月 18 日	16	機器學習簡介/INTRODUCTION TO MACHINE LEARNING –
		This course module introduces concepts of machine learning and surveys different methods and applications.
		a. Machine learning and Statistics
		    • Data model vs. Algorithmic model
		    • Explanation, Prediction, and Inference

	17	機器學習簡介/INTRODUCTION TO MACHINE LEARNING b. Supervised learning c. Unsupervised learning d. Model selection
	18	機器學習簡介/INTRODUCTION TO MACHINE LEARNING e. Interpretable Machine Learning f. Machine learning applications