National Tsing Hua University
College of Technology Management
Course Syllabus
(https://bit.ly/MBA-viz-syllabus)

科號 Course Number	11220MBA 503900	學分 Credit	1	人數限制 Size Limit	20
中文名稱 Course Title	使用機器學習進行商業分析				
英文名稱 Course English Title	Business Analytics Using Data Visualization				
任課教師 Instructor	Galit Shmueli 徐茉莉				
教師聯絡方式 Contact Information	galit.shmueli@iss.nthu.edu.tw				
上課時間 Time	3/10 and 3/24 (9:00-18:00)	上課教室 Room	TSMC台積908		
先修科目 Prerequisite(s)	Knowledge using Microsoft Excel				

本課程對應之學習目標與核心能力 Aligned Learning Goals and Learning Objectives

- Understand the role of data visualization within the business analytics domain
- Be familiar with key visualization approaches for business decision making
- Develop communication skills around data visualization
- Demonstrate critical thinking and problem-solving skills
- Gain basic experience using visualization software

課程目標 Course Objectives

At the end of the course you should be able to:

- Understand the basic principles of sound visualization
- Have confidence to explore new data using the visualization approach
- Be able to approach and deploy interactive visualization
- Understand how to identify practically meaningful discoveries
- Experience using state-of-the-art visualization software
- Think more creatively about data and insights

課程說明 Course Description

Data is a fundamental asset for business decision-making. Data visualization is a powerful approach to extracting knowledge from data, and is a core skill in business analytics. This course introduces the basics of data exploration using static and interactive visualization approaches and software. The focus is on visualizing data for business decision making.

Topics covered:
1.   The role of data exploration in generating insights
2.   Interactive data visualization as an exploratory voyage
3.   Searching for patterns and exceptions
4.   The use of data visualization software
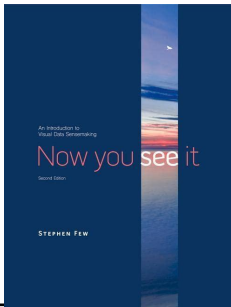
指定用書 Textbooks	
	Few, S. (2021) *Now You See It: An Introduction to Visual Data Sensemaking,* Analytics Press; Second edition, ISBN: 978-1938377129 https://www.books.com.tw/products/F017641155

參考書籍 References

Examples of poorly-designed vs. good visualizations: http://www.perceptualedge.com/examples.php

Nathan Yau's visualization blog (search by chart type): https://flowingdata.com/chart-types/

教學方式 Teaching Approach

In-class lectures

Learning by doing: In-class activities (using software): individual and team work

Practice on your own: one individual homework assignment

Communicating and sharing knowledge: In-class team discussions and presentations

AI 使用規則 AI Use Rules: Conditionally open (有條件開放). Specify in homework assignment if and how you used generative AI.

評分標準 Grading

Individual homework assignment: 20%

In-class participation: 30%

Team presentations (x2): 50%

教學進度 Course Schedule

Before First Sunday: Download and install Tableau software Read in textbook: Chapters 3-4	**Before Second Sunday:** Individual homework assignment
Sunday #1: <u>Morning</u>: Introduction to data visualization Visual perception and visualization principles Basic visualizations: pivot table, bar chart, histogram, boxplot, line chart, scatterplot Visualization in Excel <u>Afternoon</u>: Tableau software Team activity #1 Data loading: importing data, variable types Interactive visualization Annotating visualizations Team activity #2 Team presentation	**Sunday #2**: <u>Morning</u>: Data structure for visualization Restructuring data Creating new variables, deleting variables Merging datasets Advanced visualizations: heatmap, treemap, Team activity #3 <u>Afternoon</u>: Advanced visualizations: mapchart Interactive dashboards Exporting and sharing visualizations Methodical data exploration Team activity #4 Team presentation