

商業智慧與數據分析企業實作(草案)

Business Intelligence and Data Analytics Capstone Course

Credit hours: 3

Semester: Spring 2021

Instructor: 劉順仁

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Meeting Time: 9:10 am -12:10 pm, Tuesdays

Office Hours: Tuesdays 1:30 pm—2:30 pm, or by appointment.

TAs: 楊其恆(more TAs will be hired later) , 顏均竹(行政)

Course Overview and Course Goals

The main purpose of Capstone course is to provide students with an opportunity to integrate and apply the algorithms, methods and tools they have learned throughout the program to solve real-world data analysis problems that have an interdisciplinary nature. Students will conduct a team-based project that involves the main aspects of the data analytics process, and will submit a consolidated report and give a presentation at the conclusion of the project. Students get experience in working as teams, participating in project planning and scheduling, writing reports, giving presentations, interpreting results, and provide suggested solutions.

Projects

A capstone project is mainly sponsored by a **company**. A typical project is expected to map to the following overall flow (the exact nature of data analysis and output will depend on the questions and objectives, as well as the application domain):

- 1) Engage companies to establish questions and objectives;
- 2) Critically review accounting/technical literature relevant for the project;
- 3) Organize, clean and pre-process data;
- 4) Exploratory Data Analysis;
- 5) Data Analysis-based Inference/Prediction/Explanation of the studied phenomenon and/or Recommendation of decision/action based on analyzed data;
- 6) Data summarization and visualization; data product preparation;
- 7) Communicate key insights to a non-technical audience with the final data product, including the written report and oral presentation.

In this semester, capstone projects are sponsored by the following companies.

Deloitte (勤業眾信聯合會計師事務所)

EY (安永聯合會計師事務所)

KPMG (安侯建業聯合會計師事務所)

PWC (資誠聯合會計師事務所)

玉山銀行

南山人壽

裕隆融資

信義房屋

東元電機

伊雲谷

Each company will have mentors assigned to each student group working in its company. The instructor will communicate with company mentors and student groups to ensure that capstone projects progress smoothly.

Student Learning Outcomes

Through successful completion of their capstone project, students will be able to:

- 1) Identify relevant questions and objectives through client engagement;
- 2) Demonstrate information literacy through a critical review of accounting/technical literature relevant for the management and analysis of data for their group project;
- 3) Develop a project-appropriate plan and structure for data management;
- 4) Resolve group work allocation, leadership and cooperation issues;
- 5) Structure, manage and access one or more large, complex datasets;
- 6) Complete the analysis and interpretation of a complex, real-world data project; and
- 7) Present the analysis and interpretation of a complex, real-world data project in both written reports and digital+oral presentations.

Teams

Teams will initially consist of 5-6 students and a team will receive their primary project-specific guidance from a **mentor** provided by the **sponsoring company**. It is important that a student is placed onto a project that will utilize their unique data analytics skills. Similarly, it is important that students bring and deploy data analytics skills and field-specific knowledge to the team for achieving the project objectives.

There will be a technical TA assigned to every two teams. Note that the TAs will only provide technical advices and assistance on the projects and students should work independently to achieve highest quality concerning the projects.

Evaluation of Student Work: Both team *process* and subsequent products will be evaluated. Process and products will be evaluated based on the team's abilities to:

1. Identify the questions to be answered and/or data products to be developed;
2. Develop and implement a data management system for the project;
3. Clearly articulate appropriate analytical methods for the project questions and products;
4. Implement the appropriate analyses and interpret the results;
5. Communicate in an organized and professional manner with multiple audiences.
6. Elaborate accounting implications of the project.

Weekly Review Meetings

Each team will meet once a week, typically with their mentor, and all team members will report their progress for the past week and present a plan for the upcoming week. A team may request participation of the instructor in a meeting with company mentors. Each team member will prepare 1 or 2 slides summarizing their progress and plan. A summary of the weekly meeting progress report will be presented to the entire class.

The instructor will evaluate and grade the progress within the past week based on the weekly meeting presentations. If a team member cannot attend due to a valid excuse, he/she should notify the instructor and the team members. Skipping a meeting without notification will result in a score of "0" for the weekly evaluation. Students with more than three unexcused absences in weekly meetings will receive a course grade of "F".

Protecting Intellectual Property (IP) and Confidential Data

Teams have an obligation to protect both IP and data that clients share with them. NTU employees, including faculty, staff and graduate students are legally bound to protect IP and confidential data. Do not post IP or data at non-password-protected websites. Questions about IP should be directed to the mentors.

Tentative Weekly Schedule

Below is a tentative schedule of activities in the course and topics of discussions. This will be adjusted as needed during the course of the semester. Some of the weeks may feature guest lectures by professionals from industry or academia.

Week	Discussion	Assignments due by week end
1(2/23)	<ul style="list-style-type: none"> • Course Introduction • Company project summaries discussion 	<ul style="list-style-type: none"> • Pre-course survey out (projects preferences and suggestions)
2	<ul style="list-style-type: none"> • Group formation & discussion • Professional leadership and effective team work 	<ul style="list-style-type: none"> • Survey in • Groups formed
3	<ul style="list-style-type: none"> • Group progress reports & discussion • Confidentiality & IP issues 	
4	<ul style="list-style-type: none"> • Group progress reports & discussion • Capstone Data Management Ethics 	<ul style="list-style-type: none"> • <u>Writing Assignment #1 due: Questions, Objectives & Review</u>
5	<ul style="list-style-type: none"> • Group progress reports & discussion • Feedback on Writing Assignment #1 	
6	<ul style="list-style-type: none"> • Group progress reports & discussion • Exploratory Data Analysis 	<ul style="list-style-type: none"> • <u>Writing Assignment #2 due: Data Management</u>
7	<ul style="list-style-type: none"> • Group progress reports & discussion • Feedback on Writing Assignment #2 	
8	<ul style="list-style-type: none"> • Group progress reports & discussion • How to construct and deliver quality presentations 	<ul style="list-style-type: none"> • <u>Writing Assignment #3: Exploratory Data Analysis</u>
9	<ul style="list-style-type: none"> • Group progress reports & discussion • Feedback on Writing Assignment #3 	
10	<ul style="list-style-type: none"> • Group presentations 	<ul style="list-style-type: none"> • <u>Presentation: Data Analysis Plan</u>
11	<ul style="list-style-type: none"> • Group progress reports & discussion • Critique of presentations 	
12	<ul style="list-style-type: none"> • Group progress reports & discussion 	
13	<ul style="list-style-type: none"> • Group progress reports & discussion 	
14	<ul style="list-style-type: none"> • Group progress reports & discussion 	<ul style="list-style-type: none"> • <u>Writing Assignment #4: Final Report</u>
15	<ul style="list-style-type: none"> • Group progress reports & discussion 	
Finals (6/15)	<u>Presentation #2: Multimedia presentation</u>	