GEM Trailblazer Summer Programme

DETAILED COURSE INFORMATION

Academic Year	:	AY2022-2023
Session	:	Summer 2023
Course Code & Title	:	BC2406 Analytics I: Visual & Predictive Techniques
Academic Units	:	4
Pre-requisite (if any)	:	Statistics & Analysis
Delivery mode	:	Physical
Taught by	:	Dr Neumann Chew

Brief Course Description

Most organizations are data rich and information poor. The large volumes of data in an organization are "oilfields" rich in information content that are pending extraction with the right tools and models. Analytics involves the art of data exploration, visualization, communication and the science of analyzing large quantities of data in order to discover meaningful patterns and useful insights to support decision-making. The primary objective of this course is to introduce students to various techniques available to extract useful insights from the large volumes of data. At the end of the course, students will not only see the substantial opportunities that exist in real world, but also learn techniques that allow them to exploit these opportunities.

1. Intended Learning Objectives (ILOS)

By the end of this course, you should be able to:

1. Identify aspects of business problems that could be fruitfully solved by Analytics.
2. Apply selected Analytics techniques to solve the business problem.
3. Evaluate performance of the Analytics techniques.
4. Explain the workings and results of the selected Analytics techniques in the context of the business problem to client/employer.
5. Propose business solutions based on insights from the Analytics techniques.

2. Course Syllabus/Topics

Lesson	Topic/s
1	Fundamental Analytics Concepts and Industry Practice
2	Data Exploration and Summaries
3	Data Structures and Visualization
4	Data Cleaning and Preparation
5	Linear Regression Best Practice
6	Logistic Regression Best Practice
7	Classification and Regression Tree (CART) Part 1: Decision Rules, Classification Tree and Cross Validation
8	CART part 2: Pruning, Surrogates and Regression Tree
9	Text Mining and Sentiment Analysis
10	Clustering [eLearning topic]

3. Learning Outcomes

Same section 1.

4. Course Assessments

Components	Group/Individual	Weighting
1. Class Participation & Individual Presentation	Individual	30%
2. Assignment	Team#	10%
3. Project (w. individual Presentation)*	Team#	30%
4. Computer Based Assessment	Individual	30%
Total		**100%**

Important Notes:

*: All students must present their work and individual presentation will be separately assessed, in addition to written project report, slides and team presentation as a whole.

#: Peer Evaluation is mandatory and team member marks may be adjusted based on ratings (as given in Peer Evaluation Rubrics) and peer comments. A sample is provided in Annex A(i). Peer evaluation will open in the last teaching week of the semester to be submitted by mid of the next week. Self-evaluation and self-reflection are also included.

5. References/Recommended Reading List

Main Textbook:
Chew C.H. (2020). Artificial Intelligence, Analytics and Data Science, Volume 1: Core Concepts and Models. Cengage.

Supplementary References:
[1] Sanchez (2018). Handling Strings with R. eBook: https://www.gastonsanchez.com/r4strings/

[2] Siegel and Robinson (2018). Text Mining with R. O'Reilly. eBook: https://www.tidytextmining.com/

6. Other requirements

(1) General

You are expected to complete all assigned pre-class readings and activities, attend all seminar classes punctually, submit graded assessments and peer evaluation form by due dates. You are expected to take responsibility to follow up on course notes, activities, assignments and course related announcements for seminar sessions you have missed. You are expected to participate in all seminar discussions and activities.

(2) Absenteeism

Absence from class without a valid reason will affect your overall course grade. Valid reasons include falling sick supported by a medical certificate, LOA and participation in NTU's approved activities supported by an excuse letter from the relevant bodies.

If you miss a seminar or assessment, you must inform the course instructor via email prior to the start of the class or at the earliest opportunity feasible.

7. Instructor Details

Course Instructor	Office	Email
Dr Neumann Chew		neumann.chew@ntu.edu.sg