[Course Title] Exploring and Visualizing Data

[Course Code] COMP 1942

[No. of Credits] 3

[Any pre-/co-requisites] N.A.

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Course Description

This course teaches concepts and tools for exploring and visualizing data. There are a lot of real-life decision-making problems (e.g., business, logistics, economics, marketing, finance, resource management, forecasting and engineering) which can be formulated using some existing data analysis models. Existing computer science tools such as Microsoft Excel can help us to model and solve these problems easily, and to visualize the solutions. Exclusion(s): COMP 4331, ISOM 3360, RMBI 4310

List of Topics
1. Association
2. Clustering
3. Classification
4. Data Warehouse
5. Dimension Reduction
6. Web Databases

Intended Learning Outcomes (ILOs)

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

1. Identify and explain a variety of data analytic models

2. Apply appropriate data analytic models to formulate, analyze and solve problems

3. Present results in a layman form

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)	Due date
HW1	5%	20/03/2026
HW2	5%	08/05/2026
In-class Participation	10%	Lecture time
Project (Phase 1) (Phase 2) (Phase 3)	20%	20/02/2026 13/04/2026 01/05/2026
Mid-term Exam	20%	27/03/2026
Final Exam	40%	TBA

* Assessment marks for individual assessed tasks will be released within two weeks of the due date.

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
HW1, HW2, In-class Participation, Midterm Exam, Final Exam	ILO1, ILO2	These assessments assess students' ability to identify and explain a variety of data analytic models (ILO1) and to apply appropriate data analytic models to formulate, analyze and solve problems (ILO2).
Project	ILO1, ILO2, ILO3	This assessment assesses students' ability to identify and explain a variety of data analytic models (ILO1), to apply appropriate data analytic models to formulate, analyze and solve problems (ILO2), and to present results in a layman form (ILO3).

Grading Rubrics

For HW1, HW2, In-class Participation, Midterm Exam, Final Exam, we have the following grading rubrics.

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrate an excellent ability to identify and explain a variety of data analytic models. Demonstrate an excellent ability to apply appropriate data analytic models to formulate, analyze and solve problems.
B	Good Performance	Demonstrate a good ability to identify and explain a variety of data analytic models. Demonstrate a good ability to apply appropriate data analytic models to formulate, analyze and solve problems.

		Demonstrate a satisfactory ability to identify and explain a variety of data analytic models.
C	Satisfactory Performance	Demonstrate a satisfactory ability to apply appropriate data analytic models to formulate, analyze and solve problems.
D	Marginal Pass	Demonstrate marginally an ability to identify and explain a variety of data analytic models. Demonstrate marginally an ability to apply appropriate data analytic models to formulate, analyze and solve problems.
F	Fail	Fail to demonstrate an ability to identify and explain a variety of data analytic models. Fail to demonstrate an ability to apply appropriate data analytic models to formulate, analyze and solve problems.

For Project, we have the following grading rubrics.

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrate an excellent ability to identify and explain a variety of data analytic models. Demonstrate an excellent ability to apply appropriate data analytic models to formulate, analyze and solve problems. Demonstrate an excellent ability of presenting results in a layman form.
B	Good Performance	Demonstrate a good ability to identify and explain a variety of data analytic models. Demonstrate a good ability to apply appropriate data analytic models to formulate, analyze and solve problems. Demonstrate a good ability of presenting results in a layman form.
C	Satisfactory Performance	Demonstrate a satisfactory ability to identify and explain a variety of data analytic models. Demonstrate a satisfactory ability to apply appropriate data analytic models to formulate, analyze and solve problems. Demonstrate a satisfactory ability of presenting results in a layman form.
D	Marginal Pass	Demonstrate marginally an ability to identify and explain a variety of data analytic models. Demonstrate marginally an ability to apply appropriate data analytic models to formulate, analyze and solve problems. Demonstrate marginally an ability of presenting results in a layman form.
F	Fail	Fail to demonstrate an ability to identify and explain a variety of data analytic models. Fail to demonstrate an ability to apply appropriate data analytic models to formulate, analyze and solve problems. Fail to demonstrate an ability of presenting results in a layman form.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrate an excellent ability to identify and explain a variety of data analytic models. Demonstrate an excellent ability to apply appropriate data analytic models to formulate, analyze and solve problems. Demonstrate an excellent ability of presenting results in a layman form.
B	Good Performance	Demonstrate a good ability to identify and explain a variety of data analytic models. Demonstrate a good ability to apply appropriate data analytic models to formulate, analyze and solve problems. Demonstrate a good ability of presenting results in a layman form.
C	Satisfactory Performance	Demonstrate a satisfactory ability to identify and explain a variety of data analytic models. Demonstrate a satisfactory ability to apply appropriate data analytic models to formulate, analyze and solve problems. Demonstrate a satisfactory ability of presenting results in a layman form.
D	Marginal Pass	Demonstrate marginally an ability to identify and explain a variety of data analytic models. Demonstrate marginally an ability to apply appropriate data analytic models to formulate, analyze and solve problems. Demonstrate marginally an ability of presenting results in a layman form.
F	Fail	Fail to demonstrate an ability to identify and explain a variety of data analytic models. Fail to demonstrate an ability to apply appropriate data analytic models to formulate, analyze and solve problems. Fail to demonstrate an ability of presenting results in a layman form.

Course AI Policy

In this course, you are allowed to use any generative AI tool (e.g., ChatGPT) for any assessment but you are required to write down clearly which parts in your submission are used with the generative AI tool.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include some brief comments (if the answers are not correct). Students who have further questions about the feedback including marks should consult the tutor(s) who is/are responsible for marking and/or the instructor within five working days after the feedback is received.

Resubmission Policy

There is no re-submission of the assessment. But, we have the following late submission policy.

For HW1 and HW2, no late submissions are allowed.

For project, in Phase 1 and Phase 2, no late submissions are allowed but in Phase 3, we allow late submissions with the following mark deduction.

Late within the following number of days	Deduction (out of 100 marks)
1	10
2	30
3	70
4 or above	100

Required Texts and Materials

Textbook

- Galit Shmueli, Peter C. Bruce and Nitin R. Patel, Data Mining for Business Analytics: Concepts, Techniques and Application with Xlminer
  John Wiley (3rd edition)

Reference book/ Materials

- Jiawei Han, Jian Pei and Hanghang Tong
  Data Mining: Concepts and Techniques.
  Morgan Kaufmann Publishers (4th edition)
- Pang-Ning Tan, Michael Steinbach, Vipin Kumar
  Introduction to Data Mining.
  Boston : Pearson Addison Wesley (2nd edition)

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity | HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

Additional Resources

N/A