

ISOM3360 (L1, L2) - Data Mining for Business Analytics

Fall 2026

Course Name	Data Mining for Business Analytics		
Course Code	ISOM 3360		
No. of Credit	3 Credits		
Exclusion(s)	COMP 4331 & IEDA 3560		
Prerequisite(s)	ISOM 2020 OR COMP 1021 OR COMP 1023		
Professor	Rong Zheng, ISOM		
Contact	Office: LSK 4042 Tel: 2358 7642 Email: rzheng@ust.hk		
Office Hours	by appt.		
Course Schedule and Classroom	L1	TuTh 10:30AM - 11:50AM	Rm 1009, LSK Bldg
	L2	TuTh 12:00PM - 01:20PM	Rm 1009, LSK Bldg
	L3	TuTh 09:00AM - 10:20AM	Rm 1009, LSK Bldg
	LA1	Mo 05:00PM - 05:50PM	G005, LSK Bldg
	LA2	Fr 01:30PM - 02:20PM	G005, LSK Bldg
	LA3	Fr 09:00AM - 09:50AM	G005, LSK Bldg
	LA4	Fr 03:00PM - 03:50PM	G005, LSK Bldg
Course Webpage	Accessible from Canvas		
Teaching Assistant	Sophie GU (LSK 4065) Email: imsophie@ust.hk Tel: 2358 7653		
TA office hour	by appt.		

Course Overview

"For every leader in the company, not just for me, there are decisions that can be made by analysis. These are the best kinds of decisions. They're fact-based decisions." --- Former president and CEO of Amazon, Jeff Bezos

Businesses, governments, and individuals generate vast amounts of data as a byproduct of their activities. Increasingly, decision-makers are turning to intelligent technologies, including the latest AI tools, to enhance decision-making processes. In many cases, automating decision-making is essential due to the sheer volume of data and the rapid pace at which new data is generated.

This course will explore the mechanics of machine learning and AI methods, helping you develop an analytical and machine-oriented approach to problem-solving. Understanding the proper application of various analytics is crucial to achieving success.

Recently, AI tools like ChatGPT have revolutionized the business world, making knowledge acquisition and solution generation more accessible. However, the quality of AI-generated solutions remains a subject of debate. You will study the fundamentals of modern AI techniques, such as deep learning and large language models, to gain a comprehensive understanding that will enable you to use these methods wisely.

Upon completion of this course, students are expected to achieve the following objectives:

1. Approach business problems with a data-analytical mindset. Think carefully and systematically about whether and how data can enhance business performance. Be able to envision the opportunities presented by modern AI.
2. Understand the basics of machine learning and AI methods, and become confident when interacting with data scientists, business analysts, marketers, and managers.
3. Gain hands-on experience in using Python to implement data-driven solutions.

Lecture Notes and Readings

Lecture notes are the primary source of materials for the class

- Supplemental readings might be posted to Canvas or distributed in class to supplement the lecture

Supplemental book (optional):

- Data Science for Business: What you need to know about data mining and data-analytic thinking, by Foster Provost, Tom Fawcett, O'Reilly Media, 2013
ISBN: 1449361323

Grading Decomposition

The grade breakdown is as follows:

- In-class exercise 10%
- Lab participation: 10%
- Group Project Assignment: 20%
- Midterm quiz: 25%
- Final Exam: 35%

Lab Session

This is primarily a lecture-based course, but lab participation is an essential part of the learning process in the form of active practice. You are NOT going to learn without practicing the data analysis yourselves. During the lab session, I will expect you to be entirely devoted to the class by following the instructions. And you should actively link the empirical results you obtained during the lab to the concepts you learned in the lectures.

Project Assignment

You are expected to complete a group project. The group project is a teamwork, which means you need to first form a team (within same lecture section). Each team includes up to 3-4 students. In this project, you will apply the data mining techniques you learned in the class to solve real-world problems. The deliverable is a written report summarizing what you have done and what you have achieved. More details will be provided later. Assignments up to 24 hours late will have their grade reduced

by 25%; assignments up to one week late will have their grade reduced by 50%. After one week, late assignments will receive no credit.

Exams

The mid-term quiz is tentatively scheduled on **October 22nd Evening**. Let me know as early as possible if there is any unavoidable conflict. The final exam will be held during the final examination period; the date will be announced later in the semester.

Hardware and Software requirements

Computers are required for this class. You will need it to work on your group project assignment. The software we are going to use is Anaconda Navigator that includes Jupyter notebook and Python 3. (You can also use Google Colab.) You will get some guidance on the software installation once the class has started.

Schedule of Lectures and Labs (Tentative)

Please take note that this schedule is tentative and maybe adjusted as the semester progresses.

Class Number	Date	Topics	Remarks
1	Sept. 1	Course Introduction	
2	Sept. 3	Machine learning basics	
3	Sept. 8	Regression analysis	
4	Sept. 10		
5	Sept. 15	Model evaluation	
6	Sept. 17		
7	Sept. 22	Decision tree model	Team formation Due
8	Sept. 24		

9	Sept. 29	Ensemble decision trees	
	Oct. 1		No Class: National Day
10	Oct. 6	Naïve Bayes model	
11	Oct. 8	KNN model	
12	Oct. 13	Recommender System	Project Idea Report Due
13	Oct. 15	Midterm Review	
14	Oct. 20	Project Meeting	
	Oct. 22	No Class Midterm Quiz (7:00pm – 9:00pm)	
15	Oct. 27	Association Rule	
16	Oct. 29	K-means clustering	
17	Nov. 3	Artificial Neural Network	
18	Nov. 5		Project Progress Report Due
19	Nov. 10	Project Progress Meeting	
20	Nov. 12	Deep learning: CNN, RNN, GAN	
21	Nov. 17		
22	Nov. 19	Large language models: embedding, self-attention, transformer	
23	Nov. 24		
24	Nov. 26	Course Review	Project Final Report Due

Lab Session Schedule

	Sept. 4	No lab
1	Sept. 7/11	Data Understanding and Preparation
2	Sept. 14/18	Regression
3	Sept. 21/25	Cross validation, ROC/AUC
4	Sept. 28/Oct. 2	Decision Tree and Random Forest
5	Oct. 5/9	Naïve Bayes and ensemble learning
6	Oct. 12/16	KNN & Collaborative Filtering
	Oct. 19/23/26	No lab
7	Oct. 30/ Nov. 2	Association Rule and Clustering
8	Nov. 6/9	Neural Network
9	Nov. 13/16	Generative AI
10	Nov. 20/23	LLM1
11	Nov. 27/30	LLM2