# ISOM 2600 (L1-L6)
# Fall, 2024
# Introduction to Business Analytics

## DESCRIPTION

This course equips students with the foundational skills required to apply data analytics to real-world challenges they may encounter in their future careers. It covers key statistical methods in descriptive and predictive analytics, such as regression and variable selection. Students will gain an understanding of fundamental concepts and tools essential for recognizing the growing role of business analytics in organizations. The course focuses on how to apply basic business analytics methodologies using python to communicate effectively with analytics professionals, and utilize and interpret analytical models and results to make informed business decisions.

The emphasis is on the interpretation of codes, and statistical reasoning rather than on theoretical proofs and coding. Python is used as a tool for data analysis, providing students with practical experience in analyzing data while minimizing the focus on programming intricacies.

## LEARNING OBJECTIVE

- Develop an understanding of how managers use business analytics to identify, analyze, and solve business problems, and to support effective managerial decision-making.
- Learn to select and apply appropriate statistical models for analyzing both quantitative and qualitative data across various business contexts.
- Acquire the skills to use Python for implementing statistical models to address business challenges.

## PREREQUISITES

ISOM2500 Business Statistics
ISOM2020 Coding for Business

## LECTURE

Instructor: Prof Xuhu Wan, imwan@ust.hk

Teaching Assistant:
Alex, imalexj@ust.hk, L5(G012, Wednesday 4:00 pm), L6(G012, Friday, 4:00 pm).
Enoch Yin , imyin@ust.hk, L3(G012, Thursday, 2:00 pm),L4 (G012, Thursday, 4:00 pm)
Kenrick, imalexj@ust.hk , L1(G012, Tuesday, 2:00 pm), L2 (G012, Tue, 4:00pm)

# LAB:

Lab sessions are designed to teach Python coding skills and facilitate discussions related to the assignments. Lab instructors will be responsible for overseeing your performance and providing support during these sessions. The final exam will cover content exclusively from the lectures, but lab sessions will play a crucial role in helping you complete Python-based assignments effectively.

## COURSE WEBSITE

http://canvas.ust.hk

## SYLLABUS

In this course, we will focus on learning data analysis using Python. Assignments will require you to write simple code, but the exam will not test your ability to code from scratch. Instead, it will assess your understanding of existing code. For example, you should be able to explain that data.std() calculates the standard deviation of the data.

To succeed in this course, it is important to have a good understanding of concepts covered in ISOM2500. Topics 1 and 2 are particularly challenging as they serve as a bridge between ISOM2020 and the analytical components of this course. Topics 3 builds on what you learned in ISOM2500 and include some engaging applications.

Topic 1: List, Array and Pandas (2 Lecture)
- List
- Array
- Pandas DataFrame and Series

Topic 2: Data Processing (2.5 Lectures)
- Missing data
- Data slicing
- Feature engineering
- Exploratory data analysis

Topic 3: Learning Regression with Python (1.5 Lectures)
- Review of simple linear regression model
- Parameter Estimate and Interpretation
- Residual Analysis
- Multicollinearity
- Hypothesis testing and confidence interval
- Evaluate prediction accuracy using test set
- Make prediction and outliers

## REFERENCE BOOK

* Python Data Science Handbook, Jake Vanderplas

## PROGRAMMING LANGUAGE

Python

## GRADING

## GRADING

Your grade in the course is based on: Lab assignment 30%, Final exam 60%, Class Attendance 10%

Lab Assignment 1 (3 students/group) 15%

Lab Assignment 2 (3 students/group) 15%

Final exam (individual, Multiple choice, 1 hour) 60%
Class Attendance 10%

Notes:

A. Lab assignment 30%. There will be 2 Group HWs.

Note:

1) There should be 3 persons (You can choose to do it alone)in each group.

Please submit the soft copy of the assignment to us through CANVAS:

For the soft copy, please sign the name on the cover page of assignment (before the deadline); otherwise, you will have no record for HWs. The excuses, i.e. "forget to sign", "Other members submit the HW without notice" etc. are not accepted.

Note: CANVAS will automatically close the submit channel right after the deadline. It is the supporting evidence to your punctual submission of homework. No argument is allowed for those students who claim that they have submitted the homework but CANVAS did not receive it, or there is no *submit* button. Because the *submit* button is gone automatically right after the deadline. You are strongly recommended to test the *submit* button and submit your homework earlier.

2) Free riding is not allowed.

If you don't join the discussion of HWs, other members from your group have the right to submit HW without your permission and without your name on it. In addition, if you have little contribution in the discussion (e.g., Show up without preparation), your group-mates



pp for discussion. Please keep a record just in case you need to file a complaint.

B. Final Exam 60%

Individual, 30MC (plus one word problem), 1-hour exam. Python will be tested .

Appropriate documentation proving the student's illness on the day of the missed final assessment MUST be provided. The make-up final will have 35 MC questions (plus one word problem) in 1 -hour since you have more time to prepare comparing to your classmates.

C. Class participation 10%.
How to get full mark of class participation? Attend 5 lectures.

## GRIEVANCE PROCEDURE

If you disagree with grades that have been assigned to your work, you have the possibility to meet instructors within one week after the grades have been published on the course website. Be specific about what it is that you don't agree with.

## ACADEMIC INTEGRITY

Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of other groups, or tampering with the academic work of other groups. All exam answers must be your own, and you must not provide any assistance to other students during exams. Current university policy on academic dishonesty is “if a student is discovered cheating however minor the offence, the course grade will appear on the students' record with an X, to show that the grade resulted from cheating.” This X grades stays on the record until graduation. If the student cheats again and “earns” another X grade, the student will be dismissed from the university.

Submit your soft copy of assignment to us on Canvas which will be the supporting evidence of your submission of assignment. Late submission will not be accepted.