

# ISOM 3400 - Python Programming for Business Analytics Spring 2022

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**Office Hours:** By appointment.

## Class Schedule:

### Lecture

Section	Date	Time	Venue
L2	Wed. / Fri.	4:30pm ~ 5:50pm	Rm. LSKG012 Zoom: 958 7799 1906

### Lab

Section	Date	Time	Venue
LA1	Mon.	9:00am ~ 9:50am	LSKG021 Zoom: 997 2544 0282
LA2	Tues.	4:00pm ~ 4:50pm	LSKG021 Zoom: 997 2544 0282
LA3	Tues.	3:00pm ~ 3:50pm	LSKG021 Zoom: 997 2544 0282

*\* You are highly recommended to join the class via Canvas → Zoom Meeting tab.*

**Course Website:** <https://canvas.ust.hk>. All course materials and announcements will be posted on this site. You are advised to check it regularly throughout the course.

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## COURSE GOALS

This course will provide students with skills and knowledge of Python programming and experience in designing and developing business analytics applications.

## LEARNING OUTCOMES

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

- (1) Acquire general programming knowledge with Python language
- (2) Able to process data with Python language
- (3) Build some statistical and machine learning models with Python language
- (4) Conduct programming with team members effectively

## COURSE DESCRIPTION

Python has recently becoming the most popular general-purpose programming language according to many polls among programmers. The scripting nature of Python allows fast development and easy maintenance of applications. More importantly, the unparalleled community support makes Python increasingly powerful. In this course, students will learn Python programming language in the context of business data analytics. With the explosion of electronic data available to organizations and the demand for better and faster decisions, data driven intelligence becomes a key source of competitive advantage for business organizations. We believe that the combination of Python programming skills and business data analysis will provide high practical value to students majored in Information Systems as well as other related fields.

## TEACHING APPROACH

In general, the teaching approach of this course is based on the notion of sustained, deep learning by applying knowledge through programming, hands-on practices, and assignments.

Teaching & Learning Activities	Roles in the Course	Learning Outcomes addressed
Lecture	Explain key concepts to students using an active learning approach, in-class exercise, and after-class discussion of questions.	1, 2, 3
Laboratory	Apply concepts presented in lectures to hands-on exercises.	1, 2, 3
Assignment	It requires students to apply their knowledge and understanding in programming to solve business analytics problems.	2, 3, 4

## EVALUATION

Components	Percentage of the grade
A. In-class Exercises	40%
B. Assignment	20%
C. Final Exam	40%
<b>TOTAL:</b>	<b>100%</b>

### *A. In-class Exercises (40%)*

There are about 5 in-class exercises throughout the semester. They will give you hands-on practice in Python programming in a setting where you can ask questions and collaborate with fellow students. Students' answers will be collected and graded. All scores will count towards the final grade. For each in-class exercise, the deadline of submission will be one day after the corresponding in-class exercise session (the midnight of that day 23:59pm). **There will be NO makeup in-class exercises for whatever reasons.**

### *B. Assignment (20%)*

There is **ONE** individual assignment, counting towards 20% of the final grade. Details of the assignment will be provided later in the semester.

### ***Late policy***

Turn in your work early if there is any uncertainty about your ability to turn it in at the due time. Submissions up to 24 hours late will have their grade reduced by 25%; those up to 48 hours late will have their grade reduced by 50%. They will not be accepted for credit after two days.

### ***Honor-code policy***

The basic presumption is that the work you submit is your own. Every line of text and line of code that you submit must be written by you personally.

However, occasionally, it may be necessary to ask someone for help. You are permitted to do so, provided you meet the following two conditions:

1. You acknowledge any help received on the work you hand in. That is, you must include a comment in your homework submission that clearly states the name of the student, book, or online reference from which you received assistance.
2. You *understand* the work that you hand in, so that you could explain the reasoning behind the parts of the work on which you received assistance from others.

We shall not deduct credit for small amounts of acknowledged assistance. Even working as a team on one of several problems in a problem set may not hurt your grade, as long as all members of the group acknowledge their collaboration. Such shared interest can be beneficial to all concerned. Nevertheless, we *do reserve the right* to give less than full credit in circumstances where it appears that there has been *large-scale division of labor*, and you are not getting as much learning out of the in-class exercise or assignment as you should.

Submissions that fail to properly acknowledge help from other students or non-class sources **will receive no credit**. Copied work **will receive no credit**. Any and all violations **will be reported** to the University administration.

Moreover, all students are expected to comply with the HKUST policy on academic integrity. This policy can be found online at <http://ugadmin.ust.hk/integrity/student-1.html>.

**If you have any questions about what this policy means, please discuss the matter with the instructor.**

### ***C. Final Exam (40%)***

There is a final exam (open note), which covers ALL topics taught in the semester. Details of the exam will be provided later in the semester.

### ***Make-up policy***

There will be no make-up exams except due to extraordinary circumstances beyond your control such as medical emergencies. Students have to submit appropriate documentation issued by a registered medical practitioner in order to be considered for a make-up exam.

## Grade appeal

All scores will be uploaded to Canvas when ready. It is always the student's responsibility to check the scores and make sure they are correct. Any appeal to score has to be filed through email to [imsyeung@ust.hk](mailto:imsyeung@ust.hk). No appeal to a particular score is allowed 72 hours after its release.

## D. Labs

In addition to in-class exercises, this course also has a complementary lab component, which further exposes you to more programming exercises. Although lab participation will not count towards the final grade, you are highly encouraged to make good use of lab hours to solve your puzzles and hone your programming skills.

## MATERIALS

### 1. MAIN READING

This course has no required textbook. Lecture notes and extra exercises (either in pdf or ipynb format) will be posted on the course website.

Many useful resources are also available online, for example, an online book *Object-Oriented Programming in Python* (<https://python-textbok.readthedocs.io>).

### 2. SOFTWARE

- Anaconda Navigator (for Win-64, OSX-64, or Linux-64):
  - Jupyter notebook
  - Python 3
- Visual Studio Code (VS code)
- Google Colaboratory

## OTHERS

### *Zoom Etiquette*

- Turning on your camera would be most appreciated. Your facial expressions and gestures are important sources of cues that could help me know what you have learned or what you have trouble with, so I could adjust my teaching accordingly. Using virtual background is discouraged as it significantly slows down the connection speed for the entire class.
- Please rename your display name to the name you want the instructors and TAs to address you. You do not need to put your SID as your display name.
- Using the chat function for course-related discussion is encouraged.
- Please contribute as actively as you could during lectures and labs. Maintaining good interaction between you and me is the key to the success of online teaching and learning.
- **As a matter of respect, you should find a quiet place to take the class, instead of, but not limited to, on a bus, in a restaurant, places which are distracting.**

### *Email Policy*

Please put **[ISOM3400 L2 LAX]** (X being the section number) **at the beginning of the subject line of your email along with your email subject.** Failure to do so may result in a longer response time.

As expected, there will be numerous emails when it is closer to the due dates. If you need any assistance, raise them **as early as possible**, and/or take advantage of the office hours of the instructor and the TA. Note that **neither the instructor nor the TAs will provide direct answers to the assignments.**

### *Learning Environment*

We welcome feedbacks on our teaching throughout the semester. You are encouraged to contact me or the TA any time you have any questions, suggestions, concerns, or would like to ask for advice.

### TENTATIVE LECTURE SCHEDULE

WEEK (M.)	TOPICS	ASSIGNMENTS/ DUE DATES
1 Feb. 4	Introduction to Python and Business Analytics	
2 Feb. 9 Feb. 11	Python Basics: Data, Data types, and Operators	
3 Feb. 16 Feb. 18	Data Structures: Lists, Tuples, Dictionaries, and Sets	
4 Feb. 23 Feb. 25	Control Structures: if, for, while, and try statements	In-class exercise
5 Mar. 2 Mar. 4		
6 Mar. 9 Mar. 11	Functions and Classes	In-class exercise
7 Mar. 16 Mar. 18		
8 Mar. 23 Mar. 25	Web Scraping with <i>Beautiful Soup</i> and <i>Selenium</i>	In-class exercise
9 Mar. 30 Apr. 1		In-class exercise; Asg. Release
10 Apr. 6 Apr. 8	<i>NumPy</i> Arrays and Vectorized Computation	
11 Apr. 13 Apr. 15	<i>Midterm Break</i>	
12 Apr. 20 Apr. 22	Data Wrangling with <i>pandas</i>	Asg. Due
13 Apr. 27 Apr. 29		In-class exercise
14 May. 4 May. 6	Data Visualization with <i>matplotlib</i> and <i>seaborn</i>	
15 May. 11	Revision	

### TENTATIVE LAB SCHEDULE

WEEK (M.)	TOPICS
1 Feb. 7 Feb. 8	VSCode ,Anaconda & Colab: Download, install and setup
2 Feb. 14 Feb. 15	Use of VSCode, virtual env., Python Package
3 Feb. 21 Feb. 22	Data and data types: List and Tuple
4 Feb. 28 Mar. 1	Data and data types: Dictionary
5 Mar. 7 Mar. 8	If-then-else, for & while loop
6 Mar. 14 Mar. 15	try-except, function
7 Mar. 21 Mar. 22	Function and Classes 1

8 Mar. 28 Mar. 29	Function and Classes 2
9 Apr. 4	Function and Classes 3 (Lab videos will be shared with students in LA2&3.)
10 Apr. 11 Apr. 12	Selenium 1
10 Apr. 19	Selenium 2 (Lab videos will be shared with students in LA1.)
11 Apr. 25 Apr. 26	Selenium 3
12 May 3	Data visualization (Lab videos will be shared with students in LA1.)
13 May 10	Matplotlib (Lab videos will be shared with students in LA1.)

*\* Note both the lecture, lab, and assignment schedules are tentative and subject to change without notice.*