

# ISOM 3400 - PYTHON PROGRAMMING FOR BUSINESS ANALYTICS

Summer course, 2021

Every Tuesday, Thursday and Saturday from 03 July to 27 July 2021 (11 days)

02:00pm~05:20pm Lecture 05:30pm~06:20pm Lab

Mode: online through Zoom (ID: 935 6601 7902 password: 3400summer)

**Instructor:** Jiali Zhou, PhD candidate ([jzhoubf@connect.ust.hk](mailto:jzhoubf@connect.ust.hk))  
**Tel:** 2358-7638  
**Office:** LSK 4065  
**Office Hours:** Friday 10:00am~05:00pm, by appointment

**Teaching Assistant:** TBA  
**Tel:** TBA  
**Office:** TBA  
**Office Hours:** TBA

**No. of Credits:** 3 Credits  
**Prerequisite(s):** None  
**Course Website:** <https://canvas.ust.hk>

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## 1. COURSE OVERVIEW

Python has recently become 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 capability increasingly expandable and powerful. In this course, students will learn Python programming 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. The combination of Python programming skills and business data analysis capability will enhance the competitiveness of students majoring in Information Systems and other related fields.

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

After taking this course, you will:

1. Acquire general Python programming knowledge
2. Be able to process data with Python
3. Conduct programming with team members effectively
4. Be independent and able to debug effectively

## 2. TEACHING APPROACH

In general, the teaching approach of this course is based on the notion of sustained, deep learning through lectures, lab sessions and assignments.

Teaching/Learning Activities	Goal
Lecture	Explain key concepts using an active learning approach, in-class exercise, and after-class discussion of assigned questions.
Labs	OPTIONAL. Labs will provide students with extra

	opportunities to ask questions and apply concepts in lectures to hands-on exercises.
Assignments	Assignments require students to apply their knowledge and understanding in Python programming to solve business analytics problems.

### 3. EVALUATION

Components	Percentage of the grade
A. Class Participation	20%
B. In-Class Exercise	10%
C. Assignments	30%
D. Group Project	40%
<b>TOTAL:</b>	<b>100%</b>

#### ***A. Class Participation (20%)***

Participation is important in this class not only because learning is more effective if you actively interact with your fellow classmates, but also because you will only learn programming well by CODING yourself rather than reading the lecture notes or watching videos. To engage you in the coding, I will frequently ask you to write codes and provide feedbacks in the class. We will RECORD your inputs (e.g., participating in in-class exercises, contributing to in-class discussion, providing feedbacks during/after classes, etc.), and participation marks will be awarded to those who actively engage in these course-related activities.

#### ***B. In-Class Exercises (10%)***

There will be about EIGHT in-class exercise questions during the whole course. They are designed to help you to digest the course content and discover the blindspots of your understandings. Exercises will be directly related to a specific topic in the class. In most cases, you should have enough time to finish the exercises in class and you are allowed to ask questions if any. But the deadline will be the midnight on the same day the in-class exercise questions are given. You have to finish all in-class exercises but only the top 5 highest score will be counted toward the final grade.

#### ***C. Assignments (30%)***

There will be TWO assignments, each counting towards 15% of the final grade. Each assignment has a specific due date and time. Late submission **within 24 hours** after the specified due date and time will be accepted with a **25% penalty**. Late submission **beyond 24 hours** will NOT be accepted for any reason.

There will not be a final examination. Instead, you need to complete a group project.

#### ***D. Group Project (40%)***

The group project will require you to bring together many of the concepts learnt in this course to solve a business analytical problem that interest you. You can form a small group (at most THREE students) to work on the group project. The group will select the topic to work on. To solve the problem, you must apply the techniques, including data analysis, web scraping and visualization, etc., that we introduce in the class. At the LAST DAY of this course, every group will need to present their ideas about the project (the presentation would count 10% of the final grade). Each group will cooperate on writing codes, documenting it, and writing a report. One component (10% of 40%) of your final project grade will be based on your teammates' assessment of your contribution to the project. Project details will be given in a separate file and provided later.

#### 4. COURSE MATERIALS

- Main reading

There is no required textbook. Lecture notes and extra exercises (either in pdf or ipynb format) will be posted on Canvas.

- Supplemental Reading

The following two books provide nice introduction to Python programming (e-copy are available on the Internet):

Python Crash Course by Eric Matthes

Think Python: An Introduction to Software Design by Allen B. Downey

For basic data analytics,

Python Data Science Handbook by Jake VanderPlas

An Introduction to Statistical Learning, by Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani (Winner of the 2014 Eric Ziegel award from Technometrics). Downloadable from <https://www.statlearning.com/>.

#### 5. SOFTWARE

This course will use Anaconda Navigator (for Win-64, OSX-64, or Linux-64), which include:

- Jupyter notebook
- Python 3

#### 6. GRADE APPEAL

All scores will be uploaded to Student Information System when ready. It is the student's responsibility to check their scores and make sure they are correct. Any appeal to score must be filed through email to Jiali Zhou(jzhoubf@connect.ust.hk) **within 72 hours** after its release.

#### 7. OTHERS

##### *Academic Integrity*

Academic integrity is a critical value of the university community. Integrity violations destroy the fabric of a learning community and the spirit of inquiry that is vital to the effectiveness of the University. Please remember the current university rule: "If a student is discovered cheating however minor the offence, the course grade will appear on the student's record with an X, to show that the grade resulted from cheating. This X grade stays on the record until graduation. If the student cheats again and 'earns' another X grade, the student will be dismissed from the University." Plagiarism is copying anything (text or ideas) from another source without citing that source. If you use another person's idea you must cite it, even if you rewrite the idea in your own words. Extreme care must be taken to avoid passing of other's work as one's own. You are required to provide appropriate citations when you use ideas and arguments or otherwise draw on others' work (e.g. if you use codes from Internet or your classmates). If you use research from another source or from the Web you **MUST** cite the source. This is true even if you use only the general idea and not the exact words.

##### *What constitutes plagiarism in a coding class?*

The course collaboration policy allows you to discuss the problems with other students but requires that you complete the work on your own. Every line of text and line of code that you submit must

be written by you personally. You may not refer to another student's code, or a "common set of code" while writing your own code. You may, of course, copy/modify lines of code that you saw in lecture or lab.

You may find a discussion from the Computer Science and Engineering Department at the University of Washington (<https://www.cs.washington.edu/academics/misconduct>) helpful in understanding the bounds of the collaboration policy

### *Zoom Etiquette*

- Turning on your camera would be appreciated.
- Please contribute as actively as you could during lectures and labs.

### *Learning environment*

I welcome feedbacks on my teaching throughout the semester. You are encouraged to contact me at any time when you have any questions, suggestions, or concerns, or would like to ask for advice. Please remember, I am here to help you learn. Therefore, please do NOT hesitate to contact me at any time, so I can do my job better!

## TENTATIVE LECTURE SCHEDULE 03, 06, 08, 10, 13, 15, 17, 20, 22, 24, 27 JULY (11 DAYS)

WEEK (M.)	TOPICS/EXAMS	ASSIGNMENTS/DUE DATES
July. 03	Introduction to Python and Business Analytics	
July. 06	Python Basics	Assig. 1 Release
July. 08	Data Structures	
July. 10	Control Structures	Assig. 1 Due Assig. 2 Release
July. 13	Functions and Classes	
July. 15	Web Scrapping with Beautiful Soup Data	Assig. 2 Due Group Project Release
July. 17	NumPy: Arrays and Vectorized Computation	
July. 20	Data manipulation with pandas	
July. 22	Visualization with matplotlib	
July. 24	Revision+Guest speaker	
July. 27	Group project idea presentation	
Aug. 3		Group Project Due