The Chinese University of Hong Kong

Master of Science in Finance

Pre-Term Course: Introduction to Python Programming

Summer 2023

Instructor: Ms. Yuan Lu (yuan.lu@link.cuhk.edu.hk)

Office Hour: By appointment

Date, Time and Venue:

Date	Tuesday 18, 25 July 2023 1, 8, 15 August 2023
Time and Venue	Session A: 14:30pm-17:30pm (face-to-face mode) Teaching Venue: CYT 613 Session B: 18:30pm-21:30pm (hybrid mode) Teaching Venue: CYT 613 Zoom ID: 947 7098 4151 Password: mscfin
Final Exam	Date: 22 August 2023 Time: 19:00pm - 20:30pm (Tentative) Venue: CYT 615 613 (backup room)

Course Description:

This pre-term course is an entry-level Python programming course, which is designed to provide students with a foundational understanding of Python for finance. The course begins by introducing basic programming concepts such as data types and structures, which students with zero programming background can also swiftly learn. Students will then progress to learn how to work with popular Python libraries and packages, including NumPy, Pandas, and Matplotlib, to analyze and visualize data. Additionally, the course will include reviews of linear algebra and statistical tools in Python. To build practical skills in Python, we will also go through some examples of Python applications in finance. The course is also intended to serve as a relevant foundation for

future courses in the program such as Machine Learning in Finance.

No prior programming experience is necessary for this course, and by the end of it, students will have acquired some skills needed to handle complex financial data more efficiently while exploring more interesting questions for the future.

Course Outline: (Tentative, may subject to change)

Week 1: 18-July	Setting Up Programming Environment. Basic Data Types and Structures. Programming Structures. Define Functions.
Week 2: 25-July	Object-Oriented Programming. Define Classes and Create Objects. Numerical Computing with NumPy.
Week 3: 1-August	Data Analysis with Pandas. Data Visualization.
Week 4: 8-August	Linear Algebra and Statistical Tools in Python. Python Project: Mean-Variance Portfolio Optimization.
Week 5: 15-August	Python Project: Examples of Web Scraping.
Week 6: 22-August	Final Exam

Course Materials:

The course materials, including the slides, source code, exercises, and exercise answers, will be uploaded to the Google Drive share folder in due course.

https://drive.google.com/drive/folders/16h6r7kQ83mZYFsdZNwximm20Zyq0Jkki?usp=drive_link

Alternative Baidu netdisk folder is also provided for students who cannot get access to the Google Drive:

https://pan.baidu.com/s/1_fbjqg9JrqgzVm9FEO7H5w with passcode: 2nu0

Reference Materials:

There is no required textbook. There are various open resources for Python programming and no single textbook would be able to include all the information. Here provide some useful optional textbooks for your reference.

Yves Hilpisch (2018), *Python for Finance: Mastering Data-Driven Finance* (2nd Edition), O'Reilly.

Eric Matthes (2022) *Python Crash Course: A Hands-On, Project-Based Introduction*

to Programming (3rd Edition), No Starch.

Course Evaluations: If you wish to compete for the scholarship in the pre-term courses, the assessment criteria will be as follows:

Attendance & Participation	20%
In-class exercises (or take-home assignments)	50%
Exam	30%
Total	100%

Class Assignments:

To facilitate a better understanding of the course materials, and provide effective practice guidance, in-class exercises would be given during the last one hour of each class. The exercises will cover the same topics discussed earlier in the class. If in-class assignments cannot be provided due to time constraint, take-home assignments will be arranged as a substitute.

Attendance Policy

Class attendance and participation are strongly encouraged and will form part of the overall course assessment as outlined above, leading to the potential award of a Certificate of Scholarship.

Academic Honesty

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at:

http://www.cuhk.edu.hk/policy/academichonesty/.