

ECON7890
Foundations in Big
Data Analytics:
Programming

Henry Tang

Agenda

- About me
- About the Course
- Assessment
- Tips

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About me - Henry Tang

- 20+ years of experience in Technology
- Experience in both Traditional Finance Technology and Start-up
 - Former Vice President in Morgan Stanley technology division
 - Leadership roles in unicorn startup AfterShip, Lalamove, ExpressVPN, Hashkey
- Multiple current roles
 - Running my own business on software development services, training and consultation. Recent projects are mostly on AI and Data related.
 - Part time lecturer in HKBU since 2018, teaching undergraduate and master courses
 - Leveraging Data Analysis and AI for investment

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Learning Objectives

Upon course completion, you should be able to

- Wrangle with various kinds of data and generate **descriptive statistics** using the most popular programming language **Python**
- Apply the most important **machine learning algorithms** and **evaluation metrics** to real life data
- Interpret the outcomes using **visualization tools**

You are well prepared for the projects and assignment in your next semester

At the end of the course

You should be able to

- Coding in Python
- Debugging
- Know how to resolve programming problems by yourself with the help of Internet and AI tools
- Collect data through API or simple web scrapings
- Do data processing with common libraries e.g. pandas
- Apply machine learning algorithms (e.g. linear regression, Random Forest) and evaluate results

Course Structure

1. Python Fundamental: Building a Strong Foundation
2. Data Analysis with Python: From Data to Insights
3. Simulations: Simulate complex scenarios for decision making

I will adjust the materials and pace based on the feedbacks of students

Course Structure

Week 1	Introduction	Course Introduction Tools Introduction and Installation
Week 2	Python Fundamental	Data Type, Variables, Functions
Week 3	Python Fundamental	Condition, List
Week 4	Python Fundamental	Built in Libraries, For Loop
Week 5	Python Fundamental	Dictionary, While Loop
Week 6	Python Fundamental, Data Analytics	Error Handling Getting Data through Data provider

Course Structure

Week 7	Data Analytics	Getting Data through API
Week 8	Data Analytics	Getting Data through Web Scraping
Week 9	Data Analytics	Working with Data - Dataframe Operations
Week 10	Data Analytics	Machine Learning and Data Visualization
Week 11	Application	Example Applications with Data
Week 12	Simulation	Simulation
Week 13	Presentation	Project Presentation

How I run the course

- Face to face
- Zoom recordings

A Typical Class rundown

1. I teach you something by showing you
2. Class exercise and Q&A, take a break
3. I teach you some other thing by showing you
4. Class exercise and Q&A, take a break

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Assessment

- Class participations (20%)
- Individual Assignment (40%)
- Group Project (40%)

NO Midterm

NO Final Exam

Class Participations (20%)

- In-class exercises
- Submission within a week
- Bonus will be given to students who participate actively in class. E.g. asking questions, responding to questions

5% could make a big difference in this course

Individual Assignment (40%)

- 3-4 Programming exercises
- You will be given more than enough times to submit, though I encourage you to do it right after the lesson

Group Project (40%)

Topic Selection

- Build an Application that involves data
- Data Analysis of any Topics

Arrangement

- 5 person per group within the same section
- Presentation at the final class
- More details will be announced

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Tips

Tips

Write Codes

That the only way to learn!

Tips

Ask Questions

There's no stupid questions!

Tips

Help each other!

You learn when you are teaching