

DATA APPLICATION LAB PYTHON AND QUANTITATIVE ANALYSIS



Syllabus **Time: Sat & Sun 2-4 pm PDT**

Class 1 – 6 (Python from scratch + Mini Projects)

Started from 5/13

Topic 1: Introducing Python

- Python background
- Basic Data types
- Syntax and rules

Topic 2: Intermediate Python

- Complex Data Types
- Functions

Topic 3: Project I

- Object Oriented Programming
- API
- [Project]: Weather History

Topic 4: Advanced Python

- Data Structure
- Algorithm I

Topic 5: Python as a Pro

- Algorithm II
- Code Style
- Learn how to learn

Topic 6: Project II

- Module & Packages
- [Project] Web Scraping and Sentimental Analysis

Class 5 – 8 Python in Quantitative Analysis (Python in Practice)

Topic 1: Monte Carlo simulation

- Stochastic process
- Variance reduction
- Option pricing – American/ European
- Risk Measurement

Topic 2: Principle Component Analysis & Bayesian Method

- Replicated index
- Bayesian Regression

Topic 3: Foreign Exchange Market Making

Topic 4: Quantitative Finance Interview

Class 9-10 Python Web Project

- Web development using Python (Flask framework)

Project: Financial Index Replication using Principle Component Analysis

- Python Visualization