

# DATA APPLICATION LAB PYTHON AND QUANTITATIVE ANALYSIS



Updated April 14, 2016

## Syllabus

Time: Sat & Sun 2-4 pm PST

**Class 1 – 6 (Python from scratch + Mini Projects) 4/22/2017**

**Topic 1: Introducing Python**

- Python background
- Basic Data types
- Syntax and rules

**Topic 2: Intermediate Python 4/23**

- Complex Data Types
- Functions

**Topic 3: Project I 4/29**

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

**Topic 4: Advanced Python 4/30**

- Data Structure
- Algorithm I

**Topic 5: Python as a Pro 5/6**

- Algorithm II
- Code Style
- Learn how to learn

**Topic 6: Project II 5/7**

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

**Class 5 – 8 Python in Quantitative Analysis (Python in Practice) 5/13 – 5/14**

**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**

**5/20**

- Web development using Python (Flask framework)

**Capstone Project**

**5/21**

- Project: Financial Index Replication using Principle Component Analysis
- Python Visualization